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BAKER OIL TOOLS, INC.

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General Heading: **BAKER WALL SCRAPER AND BAKER WALL SAMPLER**

Unit No. **A-14**

Subject: **A Safe, Economical Solution to Hole Enlarging, Wall Scraping and Wall Sampling Problems**

Index: 250.1
Date: July, 1942
Page: 1 of 1 p.

There are a great many drilling, well repair and well completion operations wherein enlargement of the bore of the hole or scraping the face of the formation, is either desirable or necessary. In addition, there is the popular practice of *removing sections of drillable pipe to serve as windows for producing zones. For such applications, operators have come to depend upon the safety and performance of the Baker Rotary Wall Scraper. The important safety and savings features of this tool, together with application details, are given below:

REMARKABLE REAMING CAPACITY

The Baker Wall Scraper provides a means of enlarging the walls of an open hole to a diameter considerably greater than that of the casing or hole through which the tool is run. The reaming capacity of this tool in relation to its O.D. is really remarkable, having a maximum expansion range on the Blades of from 4" to 36". For example, the No. 6 Scraper will run through 9⅝" A.P.I. casing and then ream from a minimum of 9¼" to a maximum of 19".

SAFETY

The design and operation of this tool minimizes any hazard of sticking it in the hole. That means there is little danger of a costly fishing job and possible loss of precious drill pipe. The safety and performance of the Baker Wall Scraper has been ably demonstrated in many thousands of successful runs.

SIMPLY CONSTRUCTED, EASY TO OPERATE

The Baker Wall Scraper is constructed of a minimum number of essential parts, with an operating principle so simple that there is little to get out of order . . . that means no loss of expensive rig time due to failure of the tool to properly function. Any experienced driller can secure successful first-time results with this "easy-to-operate" device.

TWO TOOLS IN ONE

The Baker Wall Scraper is really "two tools in one," since by merely substituting Sampler Blades for the regular Scraper Blades, converts the tool into a Baker Wall Sampler. With this device, it is possible to take actual cores from the side walls of any uncased hole at any depth. The percentage of core recovery is high and cores are all of a size adequate for accurate laboratory analysis.

HERE IS DOUBLE VALUE FOR YOUR MONEY . . . TWO EFFICIENT TOOLS FOR THE PRICE OF ONE

TIME AND MONEY-SAVING APPLICATIONS

Several practical applications for the Baker Wall Scraper are illustrated in Figs. 3 to 6. Others are listed below. Note particularly the ability of the tool to remove sections of drillable pipe to serve as windows for producing zones.

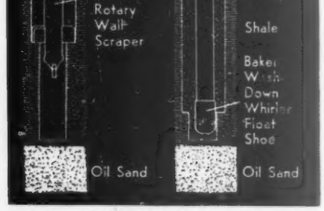
- Enlarging Holes for Casing
- Cleaning Up Oil Sands
- Setting Liners
- Setting Cement Plugs
- Bottlenecking for Cement Jobs
- ***REMOVING SECTIONS OF DRILLABLE PIPE**
- Water Shut-Off Tests
- Sidetracking
- Straightening Holes
- Fishing Jobs
- Enlarging Holes for Gravel Packing
- Side Wall Sampling (by converting Scraper into Baker Wall Sampler)

Service Note

Competent Baker men will service, make suggestions, and otherwise assist in securing best possible results.

Fig. 1
Product No. 500
Baker Rotary Wall Scraper

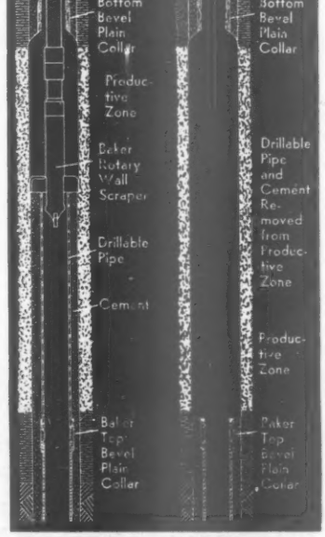
Fig. 2
Product No. 502
Baker Rotary Wall Sampler



BOTTLENECKING THE HOLE FOR BETTER CEMENTING

Fig. 3—Showing use of Baker Wall Scraper to enlarge hole for bottlenecking job. *Fig. 4—Showing how bottleneck permits uniform body of cement at Shoe joint.*

For complete details concerning the design, construction and operation of the Baker Wall Scraper and Baker Wall Sampler, see pages 279 to 287 of the 1942 Baker, or Composite Catalog. Also send for 40-page, illustrated treatise, describing in detail various applications for this tool.

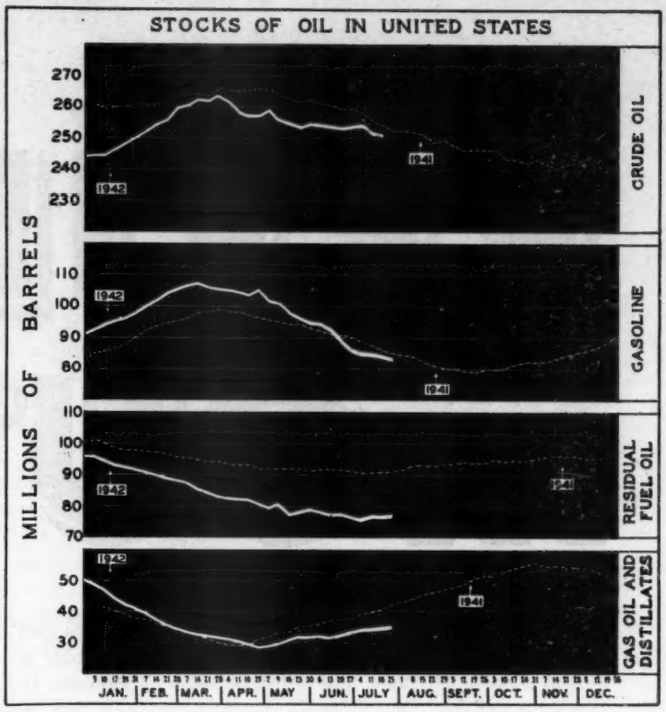


****REMOVING SECTIONS OF DRILLABLE PIPE***

Fig. 5—Showing Wall Scraper removing section of drillable pipe and cement behind the pipe. *Fig. 6—Showing drillable pipe removed, the formation scraped and zone ready for production.*

Trends

Supplies of Most Grades of Fuel Oil Must Be Increased



WITH the start of the furnace-oil consuming season 1 month away, refiners and consumers are concerned as to the supplies through the fall and winter months. The press and radio in the East and in the Pacific Northwest are predicting shortages and various plans are being suggested to protect users. While fewer consumers are involved the residual-fuel-oil situation parallels that of the lighter fuels in many respects.

CRUDE PRODUCTION *3,719,915 bbl. daily average — down 21,655 bbl. One year ago 3,865,365 bbl.*

CRUDE STOCKS *250,505,000 bbl. as of July 18—down 806,000 bbl. One year ago 254,048,000 bbl.*

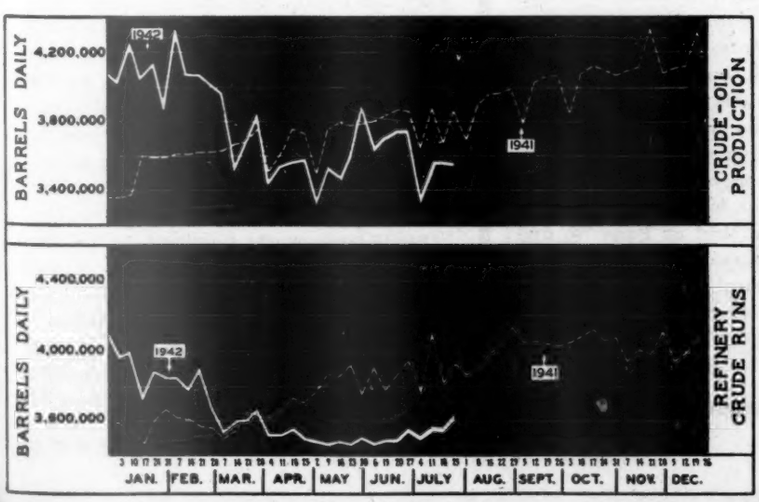
GASOLINE STOCKS *82,281,000 bbl. as of July 25—down 1,788,000 bbl. One year ago 85,073,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *77,816,000 bbl. as of July 25—up 586,000 bbl. One year ago 91,466,000 bbl.*

GAS OIL AND DISTILLATES *35,966,000 bbl. as of July 25—up 790,000 bbl. One year ago 42,126,000 bbl.*

REFINERY RUNS *3,658,000 bbl. daily week ended July 25—up 76,000 bbl. One year ago 3,932,000 bbl.*

In regard to the distillate and gas oil the bulk of the supplies for the Atlantic seaboard area normally come from Texas, Louisiana and East Coast refineries. Recent reports indicate that stocks of these oils in those areas are about 20 per cent less than a year ago with crude runs to stills 75 per cent of the July 1941 average. Percentage yields of distillates have been increased but the present output is substantially under a year ago, a development which is entirely due to the lack of transportation facilities from the Southwest to the East. Production of residual fuel oil in the same areas is approximately 75 per cent of that a year ago with stocks 15 per cent less. While the several pipe-line projects which have been authorized are expected to partially relieve this situation by the first of the year and other inland shipping facilities are to be expanded, they do not add up to a complete solution to the eastern fuel requirements through the winter months. On the west coast particular attention is being paid to the residual-fuel-oil situation. Present stocks are 11,000,000 bbl. less than they were a year ago and military, marine, and industrial demands will increase over the next several months. The suggested solution to this particular problem is to increase the production of low-gravity crudes from known California reserves.



DAILY AVERAGE PRODUCTION FOR WEEK

	July 25 crude oil	July OPC quota all oils	July 18 crude oil
Arkansas	72,350	78,500	72,250
California	698,750	739,500	701,750
Colorado	6,160	7,700	6,150
Eastern fields	98,750	112,500	95,500
Illinois	269,245	304,100	278,085
Indiana	19,200	22,000	19,100
Kansas	283,700	283,200	286,050
Louisiana	324,145	319,600	317,510
North Louisiana	*95,100*	.....	*94,200*
Louisiana Gulf Coast	*229,045*	.....	*223,310*
Michigan	60,100	64,800	67,950
Mississippi	75,850	49,900	81,500
Montana	20,980	23,100	22,715
Nebraska	3,575	4,100	3,950
New Mexico	83,345	89,500	88,270
Oklahoma	380,900	433,000	374,650
Texas	1,224,865	1,214,400	1,232,260
East Texas	*293,055*	.....	*297,695*
West Texas	*211,540*	.....	*211,890*
North Central Texas	*139,105*	.....	*142,455*
East Central Texas	*87,095*	.....	*87,695*
Texas Panhandle	*84,910*	.....	*84,500*
Texas Gulf Coast	*343,265*	.....	*342,305*
Southwest Texas	*65,895*	.....	*65,720*
Wyoming	94,000	96,800	93,880
Total United States	3,719,915	3,842,700	3,741,570
Total production, January 1-July 25, 1942			777,655,755 bbl.
Same period last year			758,407,095 bbl.

This fuel situation has a bearing on future markets for gasoline and several other products. In general there are no substitutes for petroleum fuels among all classes of consumers. It has been indicated at Washington in this connection that unless other solutions are found, fuel oils will be given preference over other products in the use of available production and transportation facilities. This situation is pointed to as indicating a possible further curtailment in gasoline consumption in certain areas later in the year and during the early part of 1943. Contrary to this viewpoint many observers are confident that it will be possible later to expand coastal tanker shipments to make up the winter shortages in overland movements. Demands for products have exceeded the supplies in several refining centers and prices generally are strong.

REVIEW... ...OUTLOOK

Supply—Demand

ESTIMATED supplies of petroleum in the United States the first 6 months of 1942, totaled 741,557,000 bbl., or 4,097,000 bbl. daily. The sources of the average daily supplies were: Crude oil, 3,751,000 bbl.; natural gasoline, 230,000 bbl.; imports, 116,000 bbl. These totals compare with those for the first half of 1941: Crude oil, 3,654,000 bbl.; natural gasoline, 163,600 bbl.; imports for domestic use, 198,850 bbl. The largest increases in crude-oil output were in Kansas and Mississippi, the gain of 18,105,000 bbl. in those two states exceeding the national increase of 17,491,000 bbl. The largest declines were in Texas, New Mexico, and Michigan.

The demand (domestic plus exports) for all oils the first 6 months totaled approximately 776,000,000 bbl. (4,287,000 bbl. daily). a 2.8 per cent increase. Shipments of motor fuels for domestic and foreign consumption were 321,000,000 bbl., an 0.8 per cent gain over the first half of 1941. The half-year demand for residual fuel oil totaled 201,900,000 bbl., an increase of 3.6 per cent with shipments of distillate fuel oils (all grades of distillate and gas oil) aggregating 104,000,000 bbl., an increase of 13 per cent. Other estimated demands and their percentage increases over the first half of 1941 were: Kerosene, 36,200,000 bbl., 0.9 per cent; lubricating oil, 19,430,000 bbl., decrease 0.1 per cent; wax, 325,000,000 lb., 0.6 per cent.

Due to the uncertainties of the Government's future program in petroleum rationing centering in gasoline, it is impossible to accurately project demands for the last 6 months of this year. It is estimated that gasoline requirements will total 364,495,000 bbl., or 75 per cent of demands for the last 6 months of 1941. While there are plans to reduce the consumption of fuel oils and burning oils over the remainder of the year there is no reason at this time to expect the consumption of these oils to be much under the record totals of the last half of 1941. These conditions point to a minimum average daily demand of 4,100,000 bbl. for all oils during the last half of 1942 of which at least 3,700,000 bbl. daily should be supplied from domestic fields. Reduced production in Illinois and Mississippi is in prospect.

Exploration—Reserves

DISCOVERIES during the first 6 months added 150,350,000 bbl. of oil to the nation's proven reserves or less than one-quarter of withdrawals. Extensions to existing fields added another 217,520,000 bbl., so that new oil proven fell 311,064,000 bbl. short of output. The figures covering proven reserves cover only half of the story, however. Restrictions on drilling have prevented development of the new fields but speeding up of exploration resulted in opening up new areas and new pays for further exploration.

During the second half year, exploration of the Wilcox trend from the Mississippi to the Rio Grande will be increased. The encouragement given to the search for deep pays in East Texas and in Arkansas and Louisiana will undoubtedly intensify that search. The area in which Ordovician oil is proven has been extended both in Oklahoma and West Texas and will lead to deep drilling in an attempt to push the limits still farther.

In spite of the restrictions on development drilling this year, new objectives uncovered in many areas are more promising than in recent years and there is a possibility that the cycle of deficient discoveries may be nearing a close. California and the states east of the Mississippi have largely failed to share in this promise which may lead to a further concentration of exploration in the Mid-Continent, Rocky Mountain, and Gulf districts.

Drilling

COMPLETIONS during the first half of 1942 amounted to 9,392 or 4,861 below the level of last year. There were 4,098 fewer oil wells, 254 fewer gas wells, and 509 fewer dry holes. This decline was largely due to the operation of M-68 requring 40-acre spacing but there was also the fact that there were fewer than the normal number of proven locations yet to be drilled. Over most of the country, the average depth of wells increased and the average depth rose from 2,955 ft. to 3,266 ft.

The falling off of drilling was general but in a few districts one or more fields kept activity from dropping to too great an extent. Since January was nearly a normal month in which M-68 had not taken full effect, it is quite possible that drilling during the second half year will fall even below present levels. In fact, spokesmen for OPC have lowered estimates on the total number of wells to be drilled this year to less than 16,000. There are, however, certain areas in which more drilling may be expected. These include the northern sector in the West Texas Permian basin where a field of the first magnitude appears to be developing. Eastern Texas, the Wilcox trend in Louisiana and Texas, and southern Kansas will also remain active.

Decline in production from Illinois, Oklahoma, and Mississippi with only minor dis-

These pages afford the reader a quick glance at what has been happening to the oil industry in the past 6 months, and what can reasonably be expected during the remainder of the year. More complete data are presented on each of the subjects elsewhere in this issue. Reserves are considered on the next two pages. Then follows a summary of oil developments on a world-wide scale.

The regular features of the semi-annual issue start on Page 74, and include discussions on production, drilling, natural gas, Washington, pipe-line developments, all markets and a short review of engineering progress.

coveries to be developed will probably increase drilling in the neighboring states. The large number of exploration parties in the field, coupled with the desire of most companies to prove up acreage now under lease will also maintain wildcatting at present levels at least and may even increase it.

Transportation

START of work on the largest crude-oil line ever built and unprecedented overland movement of petroleum from the Southwest to the East Coast were outstanding developments in a half year of the most serious dislocation ever suffered by the domestic industry's transportation system.

The distortion, however, was world wide. Loss of Far Eastern oil supplies, spread of submarine warfare from the Atlantic to the Caribbean and the task of supplying United Nations' military forces on distant continents tended to magnify domestic problems.

Tank-car delivery of crude oil and products into the East Coast area rose to a record average of 788,550 bbl. daily in July, starting from a low for the year of 58,725 bbl. daily during the first full week of January. A grand total of 85,374,500 bbl. of petroleum moved to the East Coast via tank cars during the first 6 months, a daily average of 471,682 bbl. Most of the 62,000 tank cars now in this service have been withdrawn from the Middle West and Pacific Coast. Overland movement of petroleum to the East Coast was between 950,000 and 1,000,000 bbl. daily at the end of June. Minimum eastern requirements are calculated at 1,367,000 bbl. daily for remainder of 1942, which will rise to 1,600,000 bbl. in 1943.

The most momentous construction and operating task ever undertaken by the industry is the 550-mile, 24-in. crude-oil line between East Texas and Illinois, which is scheduled for completion before the year ends. There is a strong possibility that the line will be extended, later, from Illinois to the East Coast.

Coastwise movement of tankers, halted completely during part of the first 6 months but resumed on a limited scale before June ended, may be continued under convoy protection but the outlook is uncertain.

Refining

CONVERSION of manufacturing operations to emphasize production of fuel oil and war materials made substantial changes in refining during the first 6 months. More radical changes are in prospect as manufacturing is meshed more closely with requirements of the war program.

Crude runs to stills during the first half are estimated at 655,000,000 bbl., 13,663,000 bbl. under the volume processed in the same 6 months last year. The yield of gasoline on crude charged to stills in May was 39.9 per cent. This compares with 44.2 per cent in May 1941.

More moderate demand for motor fuel will permit conversion of certain refining facilities to the production of such materials as cumene (isopropyl benzene), codimer, ethyl benzene, diisobutylene, and butadiene, all of which are vital to prosecution of the war.

Research, design, and construction throughout the first half year were concentrated on conversion of existing facilities to operations productive of war materials or centered on new installations for the specific purpose of recovering these products.

Expenditure of $650,000,000 on plants for the production of synthetic-rubber components now under way, nearly that much more for aviation-gasoline units and facilities for recovery of toluene indicate one of the most expensive construction eras in the history of the industry.

The trend, based on the requirements for concentration of large volumes of raw material in order to recover the relatively small fractions of war products, is toward larger and fewer refineries.

Petro-Chemistry

THE forepart of 1942 probably will go down in history as the birth date of commercial petroleum chemistry. The disregard of expense in development of chemicals vital to the war is affording a more rapid transition for complex hydrocarbons from laboratory curiosities to commercial products than would have taken place under tranquil conditions.

Currently, refinery facilities and raw materials are concentrated on the production of a comparatively few hydrocarbons essential to war. But in building the equipment needed to recover the comparatively short list of most essential war materials inherent in petroleum hydrocarbons, refiners are laying the cornerstone for a more permanent and broader field of chemical manufacture.

The overlap between petroleum chemistry and the manufacture of war materials is too complete at this stage to draw a sharp line of demarcation between the former and routine refining. There is indication, however, that some of the facilities now devoted exclusively to the production of war materials will be freed to explore more diversified operations at conclusion of the war and it is then, most refiners believe, that the seeds of the petroleum-chemistry industry will germinate to full potentialities.

Certain refiners have become allied with chemical companies which take the raw gases from cracking furnaces and start from that point to synthesize the desired chemicals. Several chemical plants now aligned with petroleum refiners are operating primarily on ethylene derived from the gases produced in high-temperature cracking. Ethyl alcohol, ethyl glycol, ethyl chloride and, more recently, acetylene, are some of the chemicals currently produced on commercial scale from ethylene.

Butane, propane, pentane, their isomers and homologues are among the most abundant and versatile raw materials for the production of synthetic chemicals.

Markets

CRUDE and product markets of the industry rubbed against ceilings established by the Office of Price Administration throughout the first half. Price Order No. 88 was issued February 2, replacing a loosely knit control previously enforced by moral suasion.

Except for the 25-cent advance authorized on Pennsylvania Grade crude March 26, posted prices established in May 1941 prevailed in all producing districts the first 6 months.

A series of four advances in motor-fuel prices on the East Coast, authorized by OPA to offset higher cost of transportation, aggregated 3.7 cents. But elsewhere the prices prevailing last November were the standard.

Gasoline prices in the larger refining centers, particularly on the Gulf Coast, lagged behind the last half of 1941 owing to inability to move materials into consuming areas.

Higher prices for heavy crudes yielding large percentages of residual fuel, particularly in California, appear possible.

Inventories

STOCKS of all oils started the year at 552,498,000 bbl. and the estimated reduction to June 30 was 34,443,000 bbl., an average decline of 190,000 bbl. daily for the 6 months. Part of the decline was seasonal but most of the reduction is accounted for by the fact that it was necessary to curtail crude-oil production and refinery operations over a large part of the period due to restrictions in tanker movements.

According to available reports inventories on June 30 were 35,228,000 bbl. under June 30, 1941. Stocks of gasoline and gas oil and fuel oil, based on days' demands, were exceptionally low. Due to this situation it is expected that every effort will be made over the remainder of 1942 to maintain supplies in line with current demands taking into consideration the usual seasonal changes in inventories of finished products. The inventory position of all grades of distillates and fuel oils in the eastern part of the United States is particularly weak.

Reserves Added by Discoveries Do Not Balance Withdrawals

By W. V. HOWARD

RESERVES added by discoveries and extensions made during the first 6 months of 1942 are estimated to be 367,870,000 bbl. This is 311,064,000 bbl. less than production during the same period but the deficiency is made up by an upward revision of proven reserves in older fields amounting to 314,070,000 bbl.

The estimated reserves found during the first half of this year are 257,836,500 bbl. less than those added during the first half of 1941 and are differently distributed. Last year 98,330,000 bbl. of new oil were added to California's reserves, or only 13,395,000 bbl. less than production. This year new oil in California amounts to only 51,400,000 bbl., or less than half of the production for the same period. In the Rocky Mountain states 7,580,000 bbl. were added to reserves compared with 9,220,000 bbl. this year. In both cases this was less than half of the oil produced. Reserves proven prior to 1941 in the Rocky Mountain states are being revised, however, and the 50,000,000 bbl. added to Wyoming's reserves will probably be increased by the end of the year and will be augmented by comparable increases in the other states. These revisions merely increase the inventory of available oil and should not mask the fact that discoveries in the Rocky Mountain states are falling far behind present output.

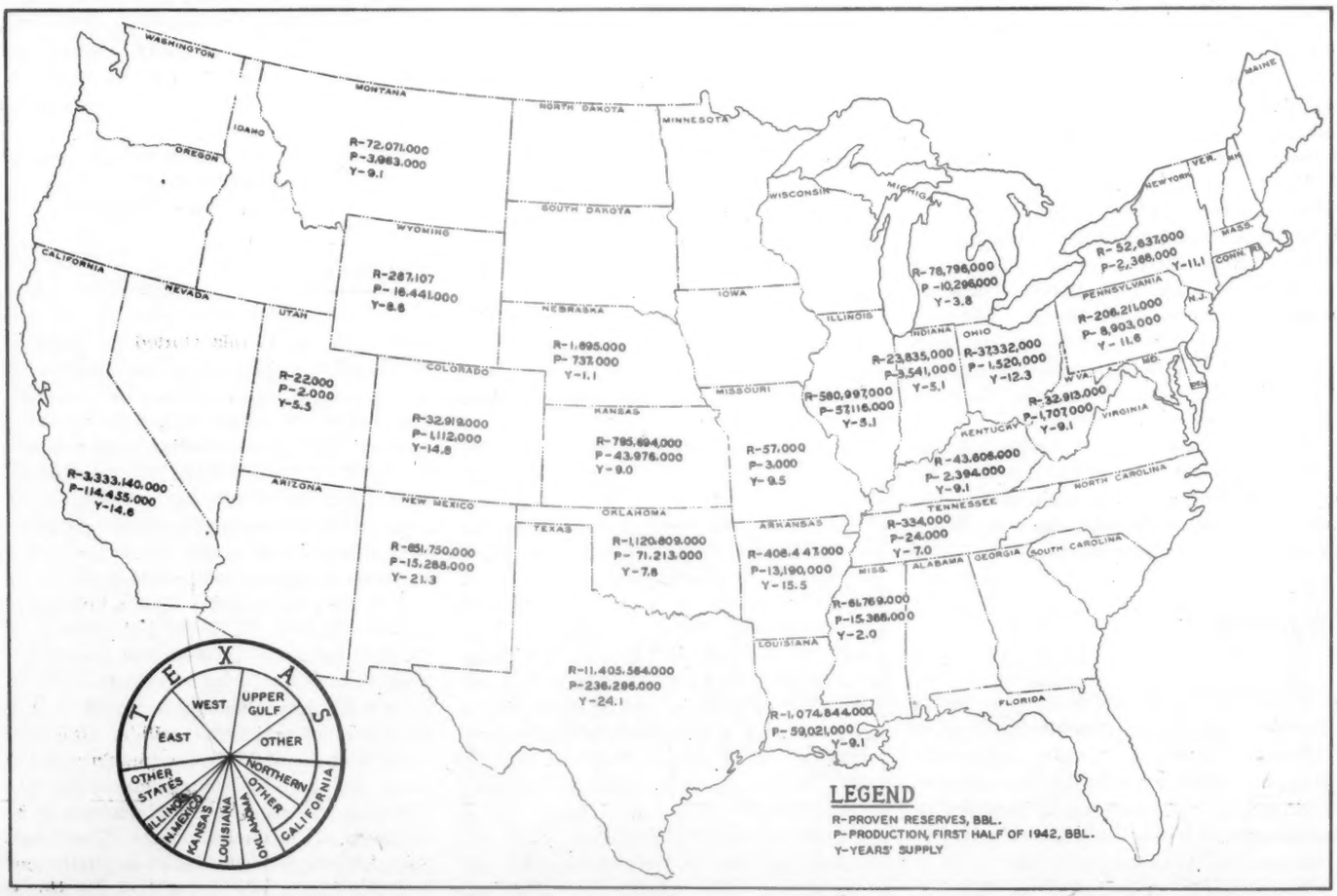
In New Mexico, no new reserves were added during the first half of last year and only an estimated 5,480,000 bbl. this past half year. This is approximately one-sixth of the production during the two periods. New Mexico has relatively large proven reserves, particularly in southeastern Lea County, and the new discoveries are mainly in Eddy and western Lea counties on new trends.

Last year 219,570,000 bbl. were added to Texas' reserves during the first 6 months, or about 90 per cent of total production. The greater part of this addition was due to extensions of the Hawkins field in East Texas. This year only 44,070,000 bbl. of proven reserves have been added but the distribution of these reserves promises much greater additions in the near future.

Arkansas and Louisiana show a considerable improvement over last year, with an estimated 140,780,000 bbl. of new oil against 46,320,500 in the first half of 1941. Even if the section is expanded to include Mississippi, with 35,000,000 bbl. of new oil last year and only 320,000 bbl. this year, there is still a considerable improvement. Much of this year's new oil has been added by Midway and the Pettit zone at Haynesville and these estimates will be revised upward as drilling expands the proven area.

The northern Mid-Continent area of Oklahoma and Kansas, together with the Forest City basin, has added only 35,000,000 bbl. so far this year compared with 125,110,000 bbl. in the first half of 1941. The older fields in these states are responding to increased allowables in Kansas and continued capacity production in Oklahoma in such a way as to require upward revision of old estimates. The production tables given in other parts of this issue show that many of the older districts have maintained their production with no appreciable decline, and in some cases an increase, over the past 3½ years. Estimates based on declines must, therefore be stepped up periodically to keep pace with production.

In the eastern states, Illinois' backlog continues to dwindle with an estimated 30,000,000 bbl. of



Map showing relationship between reserves and production in the United States. Circle shows proportionate production of the more important districts

new oil contrasted with nearly double that quantity produced. Michigan is more nearly maintaining a balance with 9,000,000 bbl. of new oil and 10,296,000 bbl. of production. The expansion of the Clayton area in Ohio provided an increase in the reserves of that state but the other eastern states continued their decline with no offsetting discoveries of any importance.

Exploration Trends

If the actual quantity of oil uncovered by drilling is disappointingly small, it must be remembered that there was an abnormally small amount of development drilling done. The number of discoveries and extensions keeps pace with those of other years, but with diminished development each discovery adds little to proven reserves. Experience shows that discoveries such as Shell's big Ellenburger well in Ward County will add many millions of barrels to reserves but all that is actually proven is 40 acres. The ultimate yield per acre will probably be large, but that fact cannot be determined on the basis of the short production history of the one well completed.

In the same way, Amerada's Black Oak discovery may eventually prove as important as Hawkins or Talco, but an estimate based on possible similarity cannot be included in an estimate of proven reserves. The present estimate based on 80 proven acres and a yield of 10,000 bbl. to the acre will in all probability be increased many times.

Another factor which must be considered in connection with any estimate of reserves is the significance of the discoveries in terms of future exploration. Despite the poor record in barrels of the year 1942 up to the present time, there have been more new areas and new zones opened to production than during any recent half-year period.

In Michigan, production has been concentrated in a belt about 50 miles broad, extending in a northeast-southwest direction across the state. Beginning with the discovery of Reed City, new fields have been found along the northwest side of this belt which have widened the known productive zone by approximately 50 per cent. At the same time, Monroe production has taken on added importance so that there will probably be extensive deepening of wells in many old fields.

In Illinois and Indiana, there has been little of importance added to our knowledge of potential pays. The discovery of Trenton oil in Madison County was probably the most important event so far this year, but the Dupo field, which also produces from the Trenton, is not far away.

The development of the Peace Creek field in Kansas extended the known Viola trend found in Zenith and was important in directing interest to this belt, but of still greater significance was the finding of oil and gas in Pennsylvanian and Ordovician pays in Barber County, well down the flank of the Barton arch. Discovery of these new pools has focused attention on southern Kansas and the productive area may extend into virgin territory in northern Oklahoma.

Last year Apache confirmed belief in the possibilities of finding Ordovician production in the Anadarko basin and this year Paul's Valley has extended the prospective producing territory well to the north of previously explored trends. On the Texas side of the Red River belt of folding the Caddo, Mississippi and Ellenburger lime areas have all been expanded and exploration for deep pays in this district is increasing as a result.

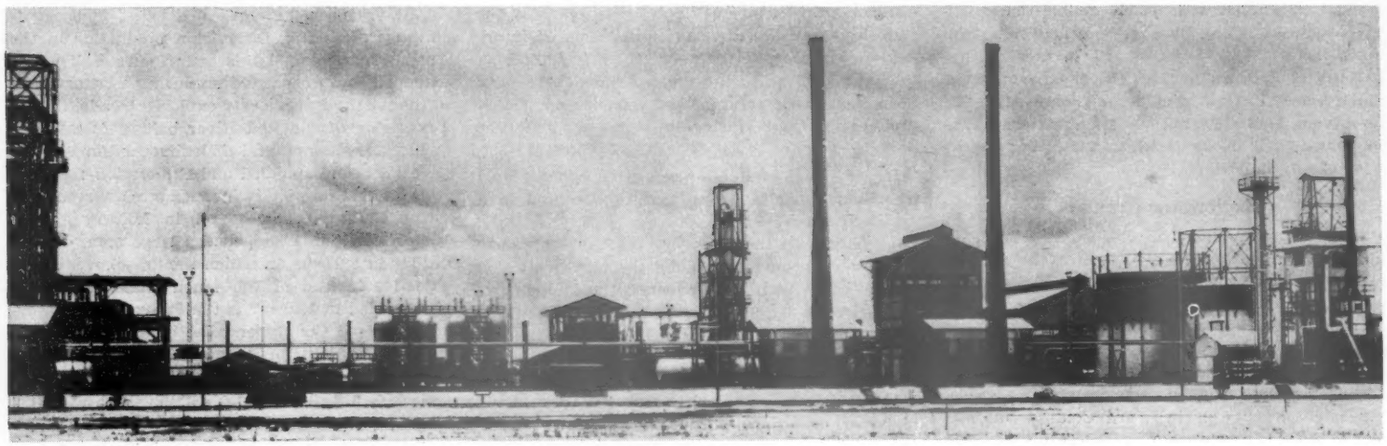
The finding of sweet oil in Midway in the Smackover lime has opened a large area, extending far into Texas, in which the Smackover is the objective instead of the much shallower Woodbine. Added to Midway is the Paluxy sand discovery in Wood County and the important development of the Pettit in Haynesville in North Louisiana. Of minor importance at present is the completion of a well in the Cotton Valley at McKamie and the extension of the Woodbine fault-line production into Hunt County. These discoveries around the flanks of the Sabine uplift and in the East Texas basin and its continuation into Arkansas have added more to the known potentialities of the district than any other discoveries made in a comparable length of time in recent years.

The Wilcox trend is now becoming an old story but this year's developments have caused certain chapters of this story to be rewritten. South Caesar has revived interest in the old Pettus sand district in Bee County. The importance of deep sands in the Wilcox has been emphasized

(Continued on Page 200)

Proven Oil Reserves on July 1, 1942

State and district—	Estimated reserves as of Jan. 1, 1942	Revision of previous estimate	Discoveries first half 1942	Extensions first half 1942	Total	Production first half 1942	Estimated reserves as of July 1, 1942	Gain or loss (—)	Years' supply: As of Jan. 1, 1942	Years' supply: As of July 1, 1942	Years' supply: Per cent July 1, 1942
California	3,386,195,000	10,000,000	2,750,000	48,650,000	3,447,595,000	114,455,000	*3,333,140,000*	—53,055,000	15.2	14.6	16.4
Southern	1,036,025,000	5,000,000	250,000	250,000	1,041,525,000	51,909,000	*989,616,000*	—46,409,000	9.9	9.5	4.8
Coastal	452,508,000	5,000,000	.....	15,000,000	472,508,000	13,665,000	*458,843,000*	6,335,000	14.0	16.8	2.3
Northern	1,897,662,000	.....	2,500,000	33,400,000	1,933,562,000	48,881,000	*1,884,681,000*	—12,981,000	20.2	19.3	9.3
Montana	75,914,000	.....	.....	120,000	76,034,000	3,963,000	*72,071,000*	—3,843,000	10.3	9.1	0.4
Wyoming	248,448,000	50,000,000	1,200,000	3,900,000	303,548,000	16,441,000	*287,107,000*	38,659,000	8.2	8.6	1.4
Colorado	30,031,000	.....	.....	4,000,000	34,031,000	1,112,000	*32,919,000*	2,888,000	17.3	14.8	0.2
Utah	14,000	10,000	.....	.....	24,000	2,000	*22,000*	8,000	7.0	5.5	...
New Mexico	661,558,000	.....	5,480,000	.....	667,038,000	15,288,000	*651,750,000*	—9,808,000	17.1	21.3	3.2
Texas	11,478,790,000	79,000,000	40,220,000	43,850,000	11,641,860,000	236,296,000	*11,405,564,000*	—73,226,000	23.1	24.1	56.1
Panhandle	669,665,000	.....	.....	.....	669,665,000	15,683,000	*653,982,000*	—15,683,000	24.1	20.4	3.1
West	2,825,977,000	45,000,000	11,400,000	13,760,000	2,896,137,000	42,528,000	*2,853,609,000*	27,632,000	32.2	33.5	14.1
North	740,608,000	.....	7,480,000	.....	748,088,000	20,458,000	*727,630,000*	—12,978,000	18.8	17.8	3.6
West Central	141,978,000	.....	1,720,000	.....	143,698,000	4,530,000	*139,168,000*	—2,810,000	14.8	15.4	0.7
East	3,218,352,000	.....	2,800,000	.....	3,221,152,000	72,715,000	*3,148,437,000*	—69,915,000	20.2	21.6	15.5
South	290,780,000	10,000,000	2,430,000	.....	303,210,000	10,617,000	*292,593,000*	1,813,000	11.0	13.7	1.4
South Central	61,119,000	.....	.....	.....	61,119,000	3,166,000	*57,953,000*	—3,166,000	9.0	9.1	0.3
Lower Gulf	870,467,000	8,000,000	1,940,000	18,550,000	898,957,000	18,248,000	*880,709,000*	10,242,000	20.8	24.1	4.3
Upper Gulf	2,659,844,000	16,000,000	12,450,000	11,540,000	2,699,834,000	48,351,000	*2,651,483,000*	—8,361,000	27.3	27.4	13.1
Louisiana	1,024,085,000	35,000,000	3,780,000	71,000,000	1,133,865,000	59,021,000	*1,074,844,000*	50,759,000	8.8	9.1	5.3
Gulf Coast	821,596,000	35,000,000	580,000	4,000,000	861,176,000	44,457,000	*816,719,000*	—4,877,000	9.2	9.2	4.0
North	202,489,000	.....	3,200,000	67,000,000	272,689,000	14,564,000	*258,125,000*	55,636,000	7.5	8.9	1.3
Arkansas	355,637,000	.....	66,000,000	.....	421,637,000	13,190,000	*408,447,000*	52,810,000	11.0	15.5	2.0
Mississippi	76,817,000	.....	320,000	.....	77,137,000	15,368,000	*61,769,000*	—15,048,000	4.9	2.0	0.3
Oklahoma	1,104,022,000	80,000,000	8,000,000	.....	1,192,022,000	71,213,000	*1,120,809,000*	16,787,000	7.2	7.8	5.5
Kansas	752,670,000	60,000,000	2,000,000	25,000,000	839,670,000	43,976,000	*795,694,000*	43,024,000	9.1	9.0	3.9
Nebraska	2,432,000	.....	.....	.....	2,432,000	737,000	*1,695,000*	—737,000	1.8	1.1	...
Missouri	.....	60,000	.....	.....	60,000	3,000	*57,000*	57,000	...	8.5	...
Illinois	608,113,000	.....	15,000,000	15,000,000	638,113,000	57,116,000	*580,997,000*	—27,116,000	4.7	5.1	2.9
Indiana	26,776,000	.....	600,000	.....	27,376,000	3,541,000	*23,835,000*	—2,941,000	3.7	3.4	0.1
Kentucky	46,000,000	.....	.....	.....	46,000,000	2,394,000	*43,606,000*	—2,394,000	9.4	9.1	0.2
Tennessee	358,000	.....	.....	.....	358,000	24,000	*334,000*	—24,000	7.8	7.0	...
Michigan	80,092,000	.....	3,000,000	6,000,000	89,092,000	10,296,000	*78,796,000*	—1,296,000	4.9	3.8	0.4
Ohio	36,852,000	.....	2,000,000	.....	38,852,000	1,520,000	*37,332,000*	480,000	10.9	12.3	0.2
West Virginia	34,620,000	.....	.....	.....	34,620,000	1,707,000	*32,913,000*	—1,707,000	10.1	9.1	0.2
Pennsylvania	215,114,000	.....	.....	.....	215,114,000	8,903,000	*206,211,000*	—8,903,000	12.9	11.6	1.0
New York	55,005,000	.....	.....	.....	55,005,000	2,368,000	*52,637,000*	—2,368,000	10.6	11.1	0.3
Total United States	20,299,543,000	314,070,000	150,350,000	217,520,000	20,981,483,000	678,934,000	*20,302,549,000*	3,006,000	14.6	15.0	



Panorama of the aviation-gasoline refinery unit at Pladjoe, South Sumatra, Netherlands East Indies

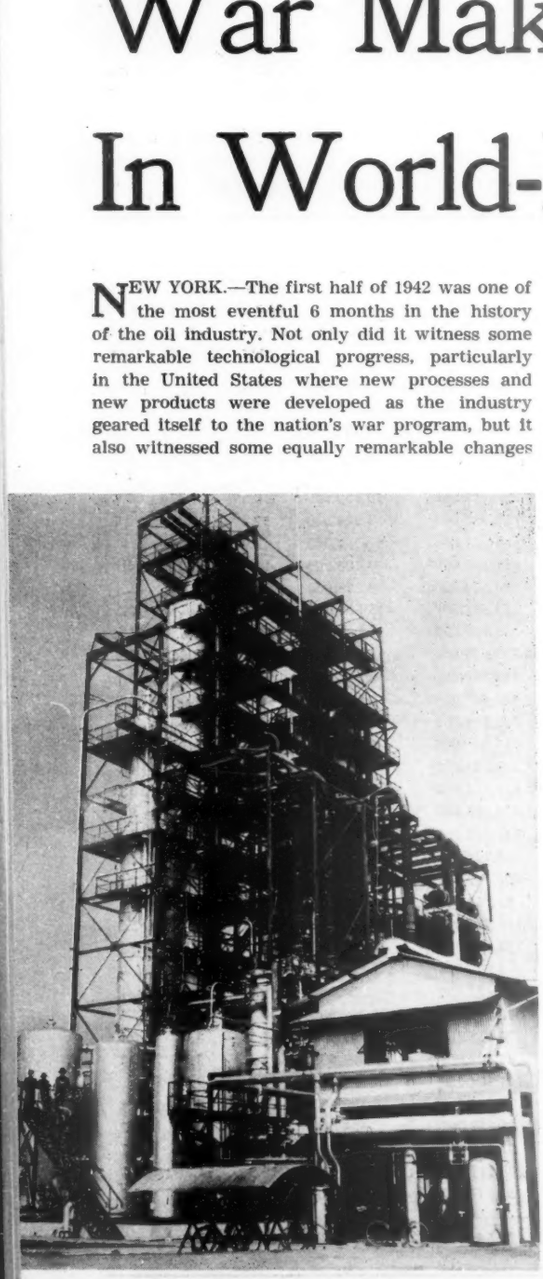
War Makes Radical Changes In World-Production Picture

By J. P. O'DONNELL

Crude-oil production outside the United States declined about 6 per cent during the first half of this year. A modest increase of 2 per cent in this country's production virtually offset decreases in other parts of the world.

Drastic changes in world oil-operating conditions presage a more severe decline in the last half, chiefly because of the scorched-earth policy which resulted in destruction of most fields in Netherlands East Indies and Burma.

NEW YORK.—The first half of 1942 was one of the most eventful 6 months in the history of the oil industry. Not only did it witness some remarkable technological progress, particularly in the United States where new processes and new products were developed as the industry geared itself to the nation's war program, but it also witnessed some equally remarkable changes in the world crude-oil-production picture.



The cracking section of Bataafsche Petroleum Maatschappij (Royal Dutch-Shell) which was destroyed by the scorched-earth policy when the Japanese invaded Sumatra

Greatest of these changes was Japan's conquest of the Netherlands East Indies and Burma, which deprived the United Nations of the only major oil-producing area of the Far East, and the consequent destruction of the wells and refineries by the retreating British and Dutch. This may prove to be a pyrrhic victory for Japan for if the destruction of properties was as complete as it has been described, it is entirely possible that the Japanese will be defeated before they can capitalize on their conquest.

Another important factor in the changed oil-production picture was Germany's extraordinary successful submarine campaign against shipping in western Atlantic and Caribbean waters. This has had a profound effect on the production of the Western Hemisphere. For example, United States production dropped from an actual 4,137,500 bbl. per day in January to an estimated 3,650,000 bbl. per day in June, a decline of 11.5 per cent.

With the second half of the year underway, further changes of equal magnitude are within the realm of possibility. The Axis pincer movement in southern Russia and northern Africa constitute the gravest threat of the 2¾ years of war to the Caucasus and Near East. If the jaws of that pincer are closed, still a great undertaking despite the Axis successes on both fronts, the loss will be a more severe blow to the United Nations than the loss of the Far East.

Tanker Shipments May Rise

Adoption of the convoy system in Western Hemisphere waters and the gradual expansion of inshore patrols offer hope that tanker shipments may be raised somewhat in the second half. In addition to these measures, tanker construction in the United States should be near its wartime peak. Each of the new vessels, larger and faster than their average predecessors, will be more than the equivalent of a lost tanker. However, tankers in convoy operate at a substantially lower rate of efficiency and it would probably require a third more boats to equal normal operation. It is certain that more tankers will be employed in United States coastwise service since it would otherwise be impossible to meet the East Coast's essential demands.

Inability to maintain tanker shipments has resulted in the extension of petroleum-product rationing to almost all sections of the globe. Only those comparatively few areas which have their own crude-oil supply and sufficient refining capacity have escaped. Rationing has extended in some degree into virtually every country in the Western Hemisphere with the exception of central and western United States, Mexico and the producing countries of northern South America which have large exportable surpluses. The curtailment in demand as a result of tanker losses has been far greater than the increase due to military requirements. The most seriously injured of the major producing countries has been

Venezuela where the daily rate of production has been approximately halved since the first of the year.

Inability to supply markets in the Western Hemisphere and the destruction that was wrought on oil properties in the Far East resulted in a decline in world production for the first half of 1942. It is estimated at 1,044,099,000 bbl. against 1,052,228,000 bbl. in the first half of 1941. Had it not been for the comparatively high rate in the United States in the first part, the decline would have been substantial. This fact illustrates the importance of the United States' position since by a modest 2 per cent increase it was virtually able to offset a 6 per cent decrease for the rest of the world.

Exploration Work Crippled

Exploration work has been thoroughly crippled by the war. Such operations in the Far East, outstanding of which were those in New Guinea, where widespread exploration activities were under way, were terminated by the Japanese attack. In other parts of the world which have not been the scene of actual conflict, work has been interrupted by the impossibility of getting the necessary equipment from this country and because there is no current demand for additional oil. The bulk of our exports of oil producing and refining equipment is being consigned to Russia. If this equipment is destined for exclusive use in the Soviet's scattered Ural-Volga region, it would offset, to some extent, the loss of the Caucasian oil which would result when and if Hitler is successful in pushing across southern Russia to Astrakhan. During recent months Russia has been given complete access to American patents covering high-octane motor-fuel processes and is expanding its facilities for producing such fuel. Some of the equipment for Russia is being fabricated in United States plants and being sent in convoys for erection abroad.

The series of unusual developments that characterized the first 6 months of the year began before the first of January when Japanese troops invaded British protectorates in North Borneo. The invasion extended then to Tarakan Island off Borneo's east coast and down the eastern coastline to include Balik Papan and the oil fields of Sanga Sanga and Sambodja. Later Sumatra fell with the East Indies major oil-producing fields and their largest refineries. After taking Java and consolidating their gains in Malaya, the Japanese struck at Burma and in mid-April the fields along the Irrawaddy River were destroyed. In only 4 months the Japanese had acquired the world's largest oil-producing region, exceeded only by the Caucasus-Near East and the United States-Latin America regions.

Depriving the United Nations of the Far East fields was probably of more importance to the Japanese than the acquisition of the wells and refineries. Well-authenticated reports indicate that all major refining installations in the islands were destroyed, pipe lines dynamited and wells plugged or set afire. The value of the properties destroyed from Tarakan to Palembang to Yenangyaung is estimated at hundreds of millions of dollars. Some idea of the extent of the properties that were destroyed may be obtained from the accompanying pictures of refining and producing facilities in Sumatra where the largest share of Far East oil was produced and refined.

The value of the acquisition of the islands and Burma to the Japs from an oil standpoint is questionable. Successful oil operations require three distinct but interdependent functions, producing, refining and transportation. For this reason, if any particular installation did escape thorough demolition, its operation would still be limited by the ability of the others to function. Apparently it will require a long war for Japan to have time to return the Far East producing and refining properties to anything like normal. Even then she will have the problem of transporting the products to the homeland. Before the war her fleet of 49 tankers would have been ample for that task but that fleet has been reduced considerably by sinkings and there is every reason to believe that her losses will continue to exceed her capacity for replacement.

The fate of the second most important oil region, extending from the Caucasus through Iraq and down both sides of the Persian Gulf, is now hanging in the balance. Once again the strategy of the Axis apparently is to deprive the United Nations rather than to acquire oil for themselves. This is indicated by the German drive toward Stalingrad. If successful this drive would cut off the Caucasus from the remainder of Russia and deprive the latter of its principal source of oil. In the few weeks since the fall of Sevastopol, Germany has driven more than half way to Stalingrad where she would control the southern Volga, one of Russia's most important oil-transportation routes. Since Germany has yet to make a gesture toward the Caucasus itself, it seems certain that her intention is to deprive rather than to acquire.

With the almost impassable Caucasus Mountains protecting Baku and the arid deserts of western Asia protecting the Near East it seems certain that the Axis pincers movement against that area is still far short of success and that it will require much more time than Japan's lightninglike conquest of the Far East.

ESTIMATED WORLD CRUDE-OIL PRODUCTION

Country—	First half 1942	First half 1941	Change
United States	678,934,000	661,443,000	+17,491,000
U.S.S.R.*	119,750,000	110,896,000	+8,854,000
Venezuela	89,500,000	102,000,000	—12,500,000
Iran	37,800,000	34,400,000	+3,400,000
Netherlands East Indies†	7,150,000	33,087,000	—25,937,000
Rumania	19,500,000	18,950,000	+550,000
Mexico	16,850,000	19,800,000	—2,950,000
Iraq	7,750,000	4,100,000	+3,650,000
Colombia	10,150,000	11,300,000	—1,150,000
Trinidad	10,250,000	10,463,000	—213,000
Argentina	11,600,000	10,742,000	+858,000
India and Burma	3,250,000	5,005,000	—1,755,000
Peru	5,700,000	5,500,000	+200,000
Germany‡	6,305,000	4,875,000	+1,430,000
Canada	5,300,000	4,873,000	+427,000
Bahrein Island	3,620,000	3,579,000	+41,000
Egypt	3,800,000	3,787,000	+13,000
Saudi Arabia	1,810,000	2,805,000	—995,000
Japan¶	1,330,000	1,270,000	+60,000
Ecuador	815,000	661,000	+154,000
Hungary	1,635,000	1,395,000	+240,000
Italy**	740,000	715,000	+25,000
France	230,000	232,000	—2,000
Others	330,000	350,000	—20,000
Total	1,044,099,000	1,052,228,000	—8,129,000

*Includes Sakhalin. †Includes Brunei, Sarawak. ‡Includes all of Poland. ¶Includes Formosa. **Includes Albania.

Separate Rubber Agency Voted

WASHINGTON, D. C. — More complications were added to the rubber situation last week when both Senate and House passed the Gillette bill to establish a separate federal agency to promote and supervise the production of synthetic rubber from agricultural products.

Over protests that the bill would deprive the War Production Board of its control of uses of raw materials and might result in taking critical materials from munitions to construct grain-rubber plants, the measure was put through by majorities which suggest a presidential veto might be overridden. Supporters of the bill asserted that the oil industry had attempted to monopolize the production of materials for synthetic rubber to the exclusion of grain-alcohol processes.

There were indications that President Roosevelt is preparing to ask some prominent and impartial person to make a complete study of the rubber situation and the many charges and complaints surrounding it. Most of the facts about the situation have been made public piecemeal through various congressional hearings.

This was evident last week by the reception accorded the announcement of the Rubber Manufacturers Association that a plan had been devised which, if approved by the Government, would provide makeshift and temporary tires for most of the privately owned passenger automobiles in the country if driving were greatly curtailed. The general public and newspaper reaction to this announcement was that it proved that there is no rubber shortage, though the intent was just the opposite.

Government officials withheld comment on the plan, but Arthur B. Newhall, WPB rubber coordinator, stated that while it contains many "ifs" it is being carefully studied.

A short and economical process for making butylene glycol, a relatively rare chemical with several important commercial uses, was announced last week by the Department of Agriculture.

The new method, being developed at the department's research laboratory at Peoria, Ill., involves the fermentation of farm crops.

Recheck of Scrap-Metal Stock Is Launched by Oil Industry

By GEORGE C. GIBBONS
Regional Chief, Industrial Salvage Section, Conservation Division, War Production Board

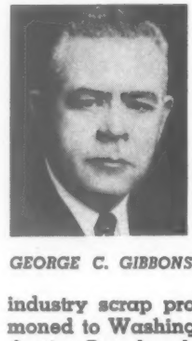
OIL men in all branches of the industry intensified their search this week for scrap metal and other salvable materials as the nation-wide collection campaign sponsored by the Conservation Division of the War Production Board moved into high speed.

In recent issues of The Oil and Gas Journal and other publications advertisements appeared explaining the scrap-metal needs, objectives of the campaign and appealing to the oil industry, other branches of American business and individuals for unstinting support.

These advertisements are an appeal to "get in the scrap"—the scrap iron and steel and other metals and rubber — which the nation vitally needs to produce the goods for victory. They are being published in an effort to relieve an alarming shortage of scrap which today is threatening the entire war-production program.

This appeal comes with particular force to the petroleum industry. Not only is the industry one of the largest users of iron and steel, but also oil men have long been among the most active and patriotic collectors of scrap. The rubber-collection campaign was organized and promoted by the oil industry which donated all facilities for its prosecution. In the field of metal scrap, American oil men have already collected over 400,000 gross or long tons, or nearly 900,000,000 lb. Much of this came in last winter when the need for scrap was acute due to loss of other sources, and our entire industry can be proud of its showing.

But as the probable response of the industry to this latest appeal is considered, it is apparent that what has been done so far is nothing to what can be accomplished with intensified effort. In oil language, the scrap which the industry has yielded thus far is grass-roots production; the real pay hasn't been reached.



GEORGE C. GIBBONS

George C. Gibbons, author of the accompanying article, in his peacetime job is executive vice president of the Texas Mid-Continent Oil and Gas Association, Dallas, Tex. After the association had sponsored a petroleum industry scrap program, he was summoned to Washington by the War Production Board and invited to join its executive staff. He preferred to serve as a dollar-a-year man, assuming direction of the industrial salvage section in the Southwest, in addition to his association duties.

In this regard, the experience of a patriotic Mid-Continent operator is recalled who had long been collecting his own scrap. He said he was confident he had gathered every pound of scrap of any description on all his leases, but promised to make another check. A week later he reported he had found an additional 100,000 lb. of scrap on his leases in one field!

Another case was that of the head of a large oil-field supply company which owned an old lease with a few wells on it. He had a scrap dealer go out to see what scrap could be found there. This one lease yielded a total of 30 tons!

These are typical of the experience of operators who have or are checking their properties again to see what additional scrap they can find. And they may be repeated in hundreds or thousands of cases in the weeks to come as the oil men roll up their sleeves to go back and get every pound of scrap they have left. Proud as the industry may be of its record, it is probable that oil and gas operators will soon show the nation that they can get in more scrap than they already have collected and shipped.

To explain briefly the reason for the advertising campaign and the expanded program to "get in the scrap," an outline of the current situation in the steel industry is pertinent. Most are familiar with the common practice of open-hearth furnaces of using 60 per cent scrap to 40 per cent pig iron. This has been done because the high percentage of scrap—which is already refined steel—makes a much better product than pig iron alone.

Yet in recent months the shortage of scrap has been so acute that the percentages have been reversed. The furnaces have had to use 60 per cent pig iron to 40 per cent scrap, and even in some cases as high as 75 per cent pig iron to 25 per cent scrap. Beyond this they cannot go and still make usable steel. In fact, some plants that cut the scrap charge to 30 per cent found they could actually make more usable steel per day by putting a higher percentage of scrap steel into a few furnaces and shutting down the others.

Industrial leaders map plans for work of the American Industries Salvage Committee. Members of the administrative committee, left to right: Oliver E. Mount, representing Steel Founders Society of America; R. S. Wilson, representing the Rubber Manufacturers Association; Robert W. Wolcott, chairman of the group and president of Lukens Steel Co.; and Charles R. Hook, vice chairman and president of the American Rolling Mill Co.

The latest report available shows eight open-hearth furnaces cold, entirely because of a lack of scrap. Others may be forced to bank their fires soon unless they can get more scrap. And electric furnaces, which use no pig iron but only scrap, are facing an especially bad situation in trying to produce the special war steels which they alone can make.

A communication was received recently from the War Production Board showing the seriousness of the present scrap situation. Summer is the time when a big stockpile of scrap is accumulated to carry us through the winter months when it is impossible in many areas to gather or move scrap. This report shows that not enough collecting is now being done for current needs. Already stockpiles are dwindling, with only slightly over 1 month's supply in all consumers' yards. To enable furnaces to keep operating—to enable the war program to continue—an additional 17,000,000 tons of scrap must be provided between now and January 10.

These figures are not mere statistics. They are tanks and ships and planes and guns. Failure to supply the scrap which feeds the production program means the breaking down of the supply lines to the men at the front. Failure to furnish this vital raw material may cost the lives of our boys in battle. It can mean the loss of the war. These are the reasons why the oil industry, along with others, must do even more now than it has in the past to get in the scrap.

Two Main Sources

The petroleum industry scrap-collection program divides itself into two main jobs. The first is the collection of all existing scrap from the leases, yards, refineries, plants and other properties of the industry. The second is the creation of scrap by the demolition of old plants, pumping stations, refineries, derricks and the like.

In both phases the industry has set outstanding records. Deeper digging is required. Because of the current emergency, oil operators and officials generally are recognizing an important fact. It is that all old materials and equipment must be put to some use. If they can be salvaged and reused by the operator or supplied another operator now needing them, well and good. But if they cannot be so used now and are not likely to be, they should be utilized in the war program by being sold as scrap. This is no time for holding materials or equipment which may never be used again, on the off chance that they may be needed several years from now or after the war. The metals in these materials are needed right now to supply the mills making war goods.

As to what can be done. One company operating in several southwestern states, by rounding up every pound of scrap at its leases, yards, plants, etc., and by systematically and patriotically demolishing and scrapping all old unusable equipment, has already collected around 5,500 net tons of scrap. Naturally, a considerable amount was in regular scrap, but an even larger quantity was created by wrecking old plants and plant facilities and scrapping them. It took courage to do this, but it is only by such a courageous program that the essential scrap can be obtained.

Most oil companies and operators already have efficient organizations to collect their existing scrap. The petroleum industry scrap program was set up by using the men most familiar with operations and materials—the men on the job. Most operators have long since instructed their field superintendents and farm bosses to designate one qualified man at each lease, yard, plant, etc., to be responsible for the collection of all scrap there. Then, under his direction, the scrap has been

(Continued on Page 68)

FIRST CARLOAD OF 24-INCH SEAMLESS
PIPE FOR WAR EMERGENCY PIPE LINES INC.
manufactured by
NATIONAL TUBE COMPANY
UNITED STATES STEEL CORPORATION SUBSIDIARY

Petroleum Coordinator Ickes (in shirtsleeves, holding hat) and other government officials and executives and workmen of National Tube Co. inspect first carload of 24-in. seamless pipe shipped to War Emergency Pipelines

This Week...

REFINING.—New process for ethyl benzene production announced, using existing facilities, offered royalty free. Costs slightly higher. But adaptability to idle equipment, speedy production of styrene are offsetting factors. . . . Polymerization plants being woven into war-production program, producing codimer for hydrogenation into aviation-gasoline stock, ethyl benzene for styrene and diisobutylene for "quick" butadiene program. . . . Butyl-rubber process improved, production program expanded to 132,000 tons, without increasing use of critical materials. Development expands total synthetic-rubber goal to 860,000 tons. Previous butyl plan provided only 60,000 tons. . . .

TRANSPORTATION.—Defense Supplies Corp. to absorb abnormal costs of oil shipments to East Coast, effective August 1. . . Block movement of oil tank-car trains outlined by ODT. Director Eastman anticipates increase of overland oil movement to possibly 900,000 bbl. daily, without requiring more cars. . . . Twenty-four inch pipe reaching War Emergency Pipelines Inc.'s right-of-way at rate of 40 to 50 cars daily. . . . Tank-car shipments to East Coast decline slightly, to 749,070 bbl. daily. . . .

PRODUCTION.—Fifth successive increase for California certified by OPC, aimed at covering heavy-crude requirements. . . . Nation's output fairly steady at 3,720,000 bbl. daily. . . . District 3 receives major share of higher August quota, District 2 chief sufferer. . . . Illinois' largest Trenton well completed. . . . New Chancellor field in Pecos County, West Texas, gains second producer, a better well than discovery, in Castile lime, just above the Delaware. . . .

MARKETS.—Crude extremely tight in Middle West. Liquidation of stocks removes flexibility. . . . Refinery motor fuel and natural-gasoline prices stiffening in Mid-Continent. . . . Eastern gasoline advance of 2.5 cents on July 29 may be rescinded. Government payment of abnormal transportation costs removes basis upon which higher prices were authorized. . . . Eastern marketers need the extra margin until transportation losses suffered earlier are liquidated.

PRIORITIES.—New equipment-control regulation prepared, patterned after PRP and Foreign Petroleum Industry Material Rating Plan. . . . PIWC demands chance to submit any new plan to functional production committees, receive their appraisal, transmit it to OPC. Opponents most critical of inventory-report provisions; because records haven't been kept to make it feasible. . . . OPC, as oil industry-equipment branch and probably acting under WPB instructions, determined to tighten material control. . . .

RATIONING.—First week's application of permanent plan shows it preferable to loosely enforced, inadequate and unpopular temporary system. . . . Agitation remains subdued for spread to Middle West. But it will reappear. Chicago printers rumored to have completed OPA order for Middle West rationing books. Doesn't necessarily mean it's imminent. . . .

STATE CAPITALS...

Secondary-Recovery Committee Is Organized in Mid-Continent

AN independent committee is being organized in the Mid-Continent oil states for the purpose of considering enactment of secondary-recovery legislation. Governors of Mid-Continent oil states have been invited to designate representatives on the committee and the active oil-trade associations have appointed operators to the new group.

Burdette Blue, Tulsa, president of the Kansas-Oklahoma Division, Mid-Continent Oil and Gas Association, is organizing the committee. The committee, when organization is complete, will endeavor to agree upon legislation which will make secondary-recovery activities practical and legally possible.

Gov. Payne Ratner of Kansas is one of the first oil-state chief executives to act. He has appointed Jeff A. Robertson, chairman of the state Corporation Commission; Harold Medill, chief attorney for the commission, and Ralph Pryor, chairman of the state oil advisory board, to represent Kansas on the committee.

Other organizations which have appointed representatives include: the Independent Petroleum Association of America, the Kansas Independent Oil and Gas Association, the Kansas Stripper Well Association, the Oklahoma Stripper Well Association, and the Oklahoma City Wilcox Engineering Association.

Legislation may be sought in the various Mid-Continent states permitting the working interests to proceed with secondary-recovery operations on a satisfactory legal basis. Chief obstruction under present laws is the position occupied by minor royalty interests that cannot be reached or that for personal reasons object to practices essential to economic operation of secondary-recovery projects.

OKLAHOMA

FIELD ALLOCATIONS for August were considered at a hearing before the Corporation Commission in Oklahoma City July 30. The commission faced the task of adjusting allowable production rates in August to a new total of 415,500 bbl., the quota certified by the Office of Petroleum Coordinator.

TEXAS

ALLOWABLE PRODUCTION of 1,388,021 bbl. daily in August was provided in the new proration schedule for Texas. The Office of Petroleum Coordinator had certified a quota of 1,396,700 bbl. daily for August, including natural gasoline and condensate along with crude.

Texas' allowable on July 18 was 1,187,283 bbl. daily, indicating an increase for the start of next month of 200,738 bbl. daily, less adjustments for completions during the last half of July.

East Texas received the largest increase. August allowable of 364,390 bbl. daily in the East Texas field is 79,396 bbl. higher than the July 18 allowable.

Shutdown days next month total nine for regular fields. Areas exempted from the shutdown provisions of the proration order are unchanged from the July list. August 8, 9, 15, 16, 22, 23, 29 30, and 31 are the shutdown days.

Texas operators anticipate that pipe-line proration may be applied with new intensity in August. Conclusions are based on an analysis of the Railroad Commission proration order which provides substantial increases in certain areas which are not supported by higher purchaser nominations.

The increased allowable of 80,000 bbl. daily assigned to the East Texas field, operators believe, will be absorbed without difficulty. There is less certainty, however, about the total increase of 93,341 bbl. assigned to Districts 2 and 4 in Southwest Texas and to District 8, West Texas.

Nominations for August in the two Southwest Texas districts were 1,840 bbl. daily higher than in July in contrast to allowable adjustments providing for a gain of 56,329 bbl. in daily production. West Texas' nominations were up 4,613 bbl. while allowable was raised 37,012 bbl.

There is a lack of coordination between adjusted allowables and the purchaser nominations in other areas. For example: nominations were down 1,226 bbl. in five representative fields in District 2 while the new proration schedule provides for an increase of 3,159 bbl. in the daily production. Allowables were raised 25,450 bbl. in 10 representative fields in District 4 in contrast to a reduction of 1,241 bbl. in the purchaser nominations.

CLINTON OWSLEY has become chief supervisor of the Texas Railroad Commission's Oil and Gas Division succeeding Dr. F. V. L. Patten who resigned to accept a post with the Office of Petroleum Coordinator. Mr. Owsley has been director of production, accounting, and oil statistics in the petroleum conservation division since August 1941. Previously he served the commission in other capacities since 1932

OPERATORS IN SEVERAL Texas Gulf Coast fields have been notified of a Railroad Commission hearing August 6 at Austin, Tex., when rules regulating the position of tubing in flowing wells will be considered. Humble Oil & Refining Co. has requested amendment of the regulations to permit the setting of tubing in flowing wells at a point not higher than 100 ft. above the top of the producing sand or at a point not more than 50 ft. above the blank liner.

Fields included in the hearing notice were West Ranch, Amelia, Anahuac, Conroe, Dickinson, Gillock, Hardin, Hastings, Livingston, Magnet, Segno and Segno (deep), Silsbee, Tomball, and Webster.

CALIFORNIA

CALIFORNIA CRUDE-OIL production will be increased 26,800 bbl. daily in August to take care of increased consumption upon which the monthly OPC quotas are assigned. In addition to increasing crude-oil allotment the OPC has raised the allotment for natural gasoline and condensate from 40,100 bbl. per day which prevailed during July to 41,000 bbl. daily for August.

The July allowable for crude oil was set at 699,400 bbl. per day and this has been increased to 726,200 bbl. daily for August. Total allotment for all fluid production was placed at 767,200 bbl. per day for August. The coordinator sets total quotas for California and, later, the Conservation Committee of California Oil Producers breaks down the amount between crude and other products under supervision of the District 5 production committee.

LOUISIANA

DAILY ALLOWABLE crude-oil production of 342,908 bbl. was provided for August operations in a new proration order issued last week by the Division of Minerals. The state allowable compares with 332,600 bbl. daily quota certified by the Office of Petroleum Coordinator. The state allowable in July was 323,998 bbl. which was also in excess of the OPC quota or 319,600 bbl.

South Louisiana fields were assigned 254,431 bbl. in August and North Louisiana areas received 88,477 bbl. of the total allocation.

KANSAS

CRUDE-OIL PURCHASERS nominated 318,038 bbl. of Kansas' crude during August, the highest commitment ever made by oil buyers in that state. The figure, announced at the regular monthly proration hearing at Wichita July 24, is 5,475 bbl. higher than nominations for July.

The Office of Petroleum Coordinator certified a quota to Kansas of 281,900 bbl. daily.

the OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

A Look at the Record

A study of the information presented in this mid-year issue should prove heartening to those who have become confused by the course of oil events. At the same time it will have a sobering effect on all operators who fully appreciate the responsibilities that are theirs after less than 8 months of war.

It will come as a surprise to many that both petroleum supply and demand for the first half-year exceeded the same period of 1941. This strong demand position is an outstanding development of the war. Restrictions in gasoline consumption are effective, due to transportation and rubber shortages, but so long as essential military and civilian needs are supplied most of the industry's motor-fuel markets will be retained.

In regard to requirements for other products it has been found that there are no substitutes comparable in cheapness and in performance. The luxury use is of minor importance. A national emergency has demonstrated, as never before, that petroleum at all times is an essential part of the American economy.

Phenomenal is the correct word to use in describing the accomplishments in recent months of petroleum's managements, its technicians and its skilled personnel. They are surpassed by no other industry engaged in war activities.

Pipe liners are rapidly finding ways to offset the overnight loss of approximately one-third of the industry's transportation facilities due to raids of the enemy on shipping. Pipe lines are being relaid, others reversed and capacities increased and a new line within 6 months will be transporting three times as much oil as was ever transported in a single line in the past.

Refiners are maintaining, within 15 per cent, the prewar operating levels and are adjusting their plant yields to meet both contraction and expansion in demands for their products. Because refiners had established the basis for the application of chemistry in their processing, the United Nations have the best in aviation fuels, lubricants, diesel fuels, explosives and many other war products coming from petroleum.

Now chemists and builders are going from the laboratories and small-scale operations to the establishment of another major industry for the manufacture of synthetic-rubber ingredients. Once all these new manufacturing operations are completed, petroleum moves to the front ranks in the chemical arts for the war and later.

Because they had reserves in the ground and in tanks, producers have kept pace with the varying and shifting crude-oil demands although drilling operations have been reduced one-half from last year. In response to a plea for new reserves, intensive exploratory operations are under way.

It would be fine if these few high points of the 6 months could be concluded with the statement that in appreciation for these numerous war contributions, the oil business has been rewarded with the needed price adjustments. But such is not the case.

Except for the long-delayed product increases granted solely to partially offset higher transportation costs, there have been no general advances in petroleum markets. In fact, exclusive of these added transportation charges, refinery revenues per barrel at most plants are lower now than on December 7.

The Government's petroleum pricing policy is not only unfair to operators but fails to take into consideration vital war conditions. What the petroleum industry has been able to do so far has come from the momentum it had when this nation entered the world conflict. It cannot maintain the pace of past months without financial returns commensurate with its responsibilities.

Change in Priority System Is Delayed to Permit Study

By HENRY D. RALPH

Some hint of what may be evolved for the domestic industry is given in examination of WPB form PD-311, known as the "Foreign Petroleum Industry Material Rating Plan."

This form breaks the industry down into five classifications: (1) marketing, (2) production, (3) exploration (production), (4) refining and transportation, (5) production and refining (covers laboratory and research equipment and natural-gasoline plant operation).

Materials are broken down into 105 separate classifications and the form calls for disclosure of inventory, amount used in previous periods, materials on which preference ratings have been assigned, and anticipated requirements.

WASHINGTON, D. C.—A tentative decision by the War Production Board to put the oil industry under a modification of the Production Requirements Plan on August 1 was suspended Tuesday pending a canvas of the inventories and materials requirements of large representative oil companies.

As a result, P-98 probably will have to be extended beyond its present expiration date of August 1, though possibly with some modifications.

Late last week WPB and OPC reached an agreement on a modified form of PRP to be applied to the oil industry, but as work progressed on details of the order and forms it was felt necessary to study the matter further. As a result the PRP will not be applied to the oil industry before the fourth quarter of this year, if at all. Meanwhile some interim priority system must be devised before Saturday, which is expected to be an extension of P-98. This will provide more time to work out the new system by a test application to the inventories, uses and requirements of representative companies in all branches of the industry. Several proposals to amend M-68 to provide pool or field exemptions to increase drilling, particularly in California, are pending before WPB which is concerned over the increased use of steel, but a decision is expected shortly.

Under PRP, each company, or unit of a company which maintains a separate inventory, files each quarter Form PD-25A giving its requirements of critical materials for the coming 3-month period. This form requires a statement of inventories on hand, use of materials during the preceding quarter, shipments, orders, preference ratings used, and similar information. It is designed primarily for fabricators of metal, and it gives WPB a close check on the flow of materials through large manufacturing plants.

Inventory Report Included

The PRP for the oil industry, if finally adopted, will have some other designation. It likely would serve the same purpose of giving WPB detailed control of the amounts of critical materials used by every unit in production, refining, transportation and marketing of petroleum and its products.

The system proposed would be an approach to allocation of steel and other critical materials within various branches of the oil industry, as well as an over-all limit on amounts used by the industry as a whole. Metals of all kinds are extremely short and WPB is under the greatest pressure to allocate more steel and alloys for all sorts of uses, and so must view the materials situation from the standpoint of the entire war economy rather than the immediate needs of any one industry. The expectation, therefore, is that the new system will be much more restrictive on the oil industry than P-98 has been.

Certain changes will also be made in Conservation Order M-68 and its various amendments and subsidiary orders which limit the use of steel in drilling and other oil-industry operations.

Adoption of any new system is expected to cause much work and confusion both for the industry and for OPC which must process the applications and report forms before they go to WPB. Efforts are being made to increase the priorities staff by OPC to cope with this situation, and oil companies are advised to study the new order and forms carefully as soon as they are available so as to avoid delays caused by improperly filled-out applications.

Two changes were made by WPB last week in priority regulations that affect oil-equipment suppliers. Form PD-25A, which is used by all manufacturers of oil equipment under PRP, was greatly simplified, and steel warehouses, including oil-well supply houses, were given a modification in their priority order, M-21-b.

The warehouse order now prohibits supply houses from selling steel for any purpose except maintenance and repair on ratings lower than A-1-a, with a few exceptions. This was done to maintain warehouse stocks for emergency supplies of small quantities of steel, since previously warehouses sold on low priority ratings but could get their supplies only on high ratings.

Council Demands Preview of Plan, Opposes Inventory

DEMAND that the industry be given an opportunity to study any plans for revision of equipment-priority procedure was lodged with OPC by the PIWC which also went on record opposed to the policy of taking an inventory of supplies other than tubular goods. In a communication addressed to OPC, the PIWC production committee also called for a detailed report on the number of wells drilled and the estimated number that will be required for 1942.

This is the PIWC production committee's request:

"1. The Petroleum Coordinator for War that Preference Rating Order P-98 be continued until a plan shall have been first submitted by the Office of the Petroleum Coordinator for War to each of the five district functional committees on production with adequate opportunity for study and recommendation, and until the Petroleum Industry War Council shall have had an opportunity to study and review each plan and make its recommendation based upon the study and recommendations of the five district functional committees on production.

"2. That the communication dated July 11, 1942, from the Office of Price Administration to the Office of the Petroleum Coordinator for War with respect to revision of OPA Price Schedule 49 as may be necessary to take care of the sale of excess stocks between oil companies, suppliers, etc., be submitted to the five district functional committees on production for study and recommendation, and that their recommendations be sent to the Office of the Petroleum Coordinator for War and the Petroleum Industry War Council for study, and, that the Petroleum Industry War Council be afforded adequate opportunity to make its recommendations before the Office of the Petroleum Coordinator for War transmits its advice to the Office of Price Administration in response to that communication.

"3. That the Office of the Petroleum Coordinator for War furnish to each and every member of the five district functional committees on production its revised estimate and forecast of the wells necessary to be drilled during the year 1942, including estimates of wildcat wells and total completions.

"4. That the Office of the Petroleum Coordinator for War furnish promptly to the committee on production of the Petroleum Industry War Council, each month, in writing, a statement of the number of wells drilled in the United States and each classification thereof, and the number of wells that have been drilled in accordance with the permitted sections of the limitation orders and those which have been drilled upon the granting of exceptions to limitation orders, and also the exceptions denied to the limitation orders in each category thereof.

"5. That the Petroleum Coordinator for War should not take an inventory of the material stocks of the petroleum industry beyond that concerned with tubular goods and required by the War Production Board.

"6. That the inventory plan recommended in the preceding motion, or any other plan that the Office of the Petroleum Coordinator for War has in mind, be submitted to the five district functional committees on production for their study and recommendation before any such plan is acted upon."

PIWC Asks Clarification on Three Government Policies

WASHINGTON, D. C.—The Petroleum Industry War Council has requested the Office of Petroleum Coordinator to seek revisions in War Department specifications permitting use of 87-octane gasoline in aviation training, to obtain deferment for essential oil-industry employes and to refrain from imposing new restrictions on drilling.

Resolutions dealing with each of the subjects have been adopted by the PIWC. Text of the three documents appears on this page.

Further Restrictions on Drilling Deplored by PIWC

IT is essential for the prosecution of the war and for the national welfare to maintain adequate reserves of petroleum, and this can only be accomplished by the drilling of a large number of wildcat wells. Comprehensive studies have indicated that new discoveries of petroleum reserves have not equaled the withdrawals from the known reserves for a period of 3 years.

For the first 5 months of the year 1942, the number of wildcat wells drilled and the new reserves discovered during this period of time has fallen far below the estimates of requirements for such time as estimated by the Office of the Petroleum Coordinator for War.

Restrictions or the suggestion of restrictions on wildcat operations or the requirement of permits discourage such operations and definitely retard this effort.

Therefore, be it resolved, that the Petroleum Industry War Council recommend that no further restrictions as to allocation or use of materials or location and drilling of wells, or the requirement of permits be placed upon exploratory or wildcat operations.

Be it further resolved, that these recommendations be presented to the petroleum coordinator for war with the request that he make this position known to other agencies of government concerned, and that he be requested to cooperate with all proper agencies or persons to the accomplishment of this objective.

Use of 87-Octane Gasoline in Training Work Sought

THE supply of 100 and 91-octane aviation gasoline is limited, and the production of 87-octane gasoline or lower can be made in substantial quantity from existing refineries with a broad selection of crude oil.

Eighty-seven-octane gasoline or gasoline of even lower octane rating can be used for purposes of aviation with a great saving and conservation of higher octane gasoline and tetraethyl lead, also making available for such manufacture (1) thermal cracking process plants, (2) many crudes now excluded and thereby accomplishing a more equitable, efficient and serviceable use of the resources and facilities of the petroleum industry to the successful prosecution of the war.

Be it, therefore, resolved, that the Petroleum Industry War Council recommends to the petroleum coordinator for war that he endeavor to secure revision of Army specifications for octane value of gasoline for use in certain aircraft and other special equipment in Army training camps in the United States so that same be reduced from 91 octane to 87 octane or less for the reasons hereinabove recited.

Deferment for Technicians Asked To Keep Industry Virile

THE use of petroleum and its products is of great and vital importance to the welfare of this country, both in the carrying out of the war effort of this nation and its allies and in the maintenance of essential civilian functions.

In the exploration and development of oil and gas fields, and in the maintenance of production and operation of producing fields, highly technical and scientific methods are used requiring the employment of specially trained and experienced technical and scientific men.

In the refining and transportation branches of the industry a high degree of skill and training is required of the engineers and others who plan and operate refining and transportation systems to process crude oil and natural gas and transport it to those points where needed.

To deprive the petroleum industry of the services of its supervisors, technicians, engineers, geologists, and those whose special training and skill are highly developed and peculiarly fitted to the industry will interfere with and hinder the efficient operation of the industry in all of its phases, and thereby directly and adversely affect the war effort of this nation.

Now, therefore, be it resolved, that the Petroleum Industry War Council request the petroleum coordinator for war to take appropriate action with authorities of the Selective Service System for the establishment of definite standards for deferment from selective service of essential supervisory, technical, and scientific employes of the petroleum industry, whose continued employment is essential to proper and economic oil production, refining and transportation.

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Tulsa's Oldest Bank Predates Oil Discovery in Mid-Continent

Tulsa's oldest bank, the First National Bank of Tulsa, which was founded 6 years before the discovery of oil in the Mid-Continent, this week celebrated its forty-seventh anniversary. The bank was established July 29, 1895.

The First National has become particularly identified with the petroleum industry through participation in the oil financing of practically every major oil development in the Mid-Continent. Its directorate includes men of long experience in the oil business. The bank acts as Mid-Continent correspondent for many of the leading banks in the nation.

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Third Successive Increase In Production Authorized

WASHINGTON, D. C.—The third consecutive increase in production of crude and other liquid-petroleum oils was recommended last week for August operations by Petroleum Coordinator Harold L. Ickes. The August quotas certified by OPC to the various producing states aggregate 4,038,500 bbl. daily, an increase of nearly 200,000 bbl. over the production recommended by Coordinator Ickes during July. Daily quotas certified for August are 57,800 bbl. less than the actual production of crude and other liquid-petroleum oils in the same month last year.

The five states composing District 3 received an increase of 206,300 bbl. in the daily OPC production quota for August. Bulk of the higher quota was assigned to Texas which gained 182,300 bbl. over the daily certification in July. The state remains, however, about 77,000 bbl. per day below its rate of production a year ago. Other substantial gains in District 3 were: Louisiana, 13,000 bbl.; New Mexico, 7,800, and Arkansas, 3,100 bbl. daily. Mississippi, the fifth producing state in District 3, is virtually unchanged at 50,000 bbl. daily, up 100 bbl. from the July quota.

The production quota assigned District 2 next month is 33,800 bbl. below the July certification and is 81,700 bbl. below the actual daily output a year ago. The chief downward adjustment was in Oklahoma where the August quota of 415,500 bbl. daily is 17,500 bbl. below the July rate and 38,800 bbl. under the output a year ago.

California received another substantial increase of 27,700 bbl. daily, lifting its certified quota to 767,200 bbl. per day. The August increase is the fifth consecutive gain assigned that state as a result of the necessity for insuring an adequate supply of fuel oil for military and essential industrial needs in the Pacific Coast area.

PRODUCTION CERTIFIED TO STATES
(Barrels daily)

District and state—	Total petroleum liquids		Actual production total petroleum liquids
	Aug. 1942	July 1942	Aug. 1941
District 1:			
New York	15,300	15,300	14,200
Pennsylvania	52,800	54,100	45,100
West Virginia	17,300	17,800	12,500
Total	85,400	87,200	71,800
District 2:			
Illinois	289,300	304,100	393,600
Indiana	20,600	22,000	18,000
Kansas	281,900	283,200	248,000
Kentucky	14,100	14,100	12,900
Michigan	66,800	64,800	42,400
Nebraska	4,100	4,100	6,200
Ohio	10,500	11,300	9,100
Oklahoma	415,500	433,000	454,300
Total	1,102,800	1,136,600	1,184,500
District 3:			
Arkansas	81,600	78,500	76,900
Louisiana	332,800	319,600	333,000
Mississippi	50,000	49,900	51,500
New Mexico	97,300	89,500	112,200
Texas	1,396,700	1,214,400	1,473,800
Total	1,958,200	1,751,900	2,047,400
District 4:			
Colorado	7,200	7,700	5,900
Montana	22,700	23,100	20,900
Wyoming	95,000	96,800	85,100
Total	124,900	127,600	111,900
District 5:			
California	767,200	739,500	680,500
Other	.....	.....	.....
Total United States	4,038,500	3,842,800	4,096,300

Butyl-Rubber Potential Yield Is Doubled by Revised Plan

NEW YORK.—New developments in the manufacture of synthetic rubber designed to speed the country's program for the production of this currently critical material have been announced by Standard Oil Co. (New Jersey). Adoption of the new developments will greatly increase the productive capacity of butyl rubber from plants now under construction, according to a statement by W. S. Farish, president.

Five butyl-rubber plants are now being built by the Standard Oil Co. of Louisiana and Humble Oil & Refining Co. for the Government. The combined capacity of these plants, as originally designed, was 60,000 tons per year. With the adoption of the new developments an increase in capacity to 192,000 tons per year at an estimated increased cost of 27 per cent was made possible.

In order to get the benefit of the improved method without using greater quantities of steel and other construction materials, the War Production Board has authorized the elimination of one of the five planned plants. The material and money thus saved will be used for the revamping of the other four units which will have a combined capacity of 132,000 tons per year.

More Isobutylene Needed

Since butyl rubber consists almost entirely (98 per cent) of isobutylene, increased capacity for the preparation of this material will also be necessary. It is believed that the Standard of Louisiana and Humble refineries will be able to supply 90,000 tons of isobutylene at no net increase in cost or expenditure of construction materials. The remaining 42,000 tons of isobutylene is expected to be available from other refineries being built in the area under government auspices.

Isobutylene is also the principal constituent employed in the Flexon process announced a week earlier by Jersey. However, it is believed that sufficient quantities of the common refinery gas will be available for both processes. Flexon may be manufactured in existing refining equipment. It is inferior to butyl rubber but because it may be made without additional plant construction, some quantities of it will be made.

The latest improvements in the butyl-rubber process are expected to reduce the plant investment from $750 per ton of annual capacity to about $350. At the same time they are expected to result in a reduction of approximately 5 cents per pound in the cost of manufacturing butyl.

"The butyl and Flexon developments, plus the 'quick' butadiene program which also was described last week, reflect the intensity of the research and development work being done today to further the synthetic-rubber program of our country," Mr. Farish said. "We ourselves have a staff of about 200 technical men constantly seeking ways of making rubber more quickly, more efficiently, and of better quality."

"Certainly there is need for additional development and discovery in this field if we are to surmount the difficulties of the rubber shortage, and any discoveries which we bring forth are offered with the intention of adding to the potential capacity of the established government program and not with any thought of supplanting any plans already under way. Our job and the job of everyone concerned with the production of synthetic rubber is to produce as much as we can and as cheaply as we can. The Government will decide in all cases which methods promise this result.

"We must remember that the Japanese conquest of the rubber-producing countries of the world forced upon us the job of manufacturing rubber for the non-Axis countries of the world. The magnitude of this task is so great that it will be some time yet before the nation has licked completely the problem of supplying enough synthetic rubber to meet the huge demands made upon us and our allies.

"We must be careful not to become unduly optimistic each time we learn of new progress being made in our battle to produce rapidly the thousands of tons of synthetic rubber we and our allies require today, not only for the war but for essential civilian uses."

•

Atlantic Announces New Ethyl Benzene Process

NEW YORK.—Atlantic Refining Co. Tuesday announced a new process for the production of ethyl benzene from which styrene, the 25 per cent component of buna-S rubber, may be recovered. The process is estimated to be 5 per cent more expensive than existing methods of producing styrene but is more readily adaptable.

The process would employ refining capacity that is now idle by revamping facilities thus eliminating expensive new construction. The process is offered royalty free.

•

Results of Industry's Rubber Campaign Evokes High Praise

WASHINGTON, D. C.—The oil industry's scrap rubber-collection drive rounded up a total of 454,155 tons, President Roosevelt announced last week in releasing a report on the drive from William R. Boyd, Jr., chairman of the Petroleum Industry War Council.

The end of the drive brought congratulations from President Roosevelt and other high officials of the Government.

"The per capita figures of rubber collections by states," declared Mr. Boyd in reviewing results, "indicate that Nevada was far in the lead. Oregon was second, Idaho third, Montana fourth, North Dakota fifth, and Kansas sixth, with Washington, Arizona, and Wyoming each reaching for seventh place. The per capita returns were lowest in New York, New Jersey, District of Columbia, Georgia, Alabama, and Pennsylvania in the order named.

"However, using figures of total tonnage collected, California ranked first, Illinois second, Texas third, Ohio fourth, Michigan fifth, New York sixth, and Pennsylvania seventh."

"I wish you would extend to your members in whatever way you see fit," wrote Arthur B. Newhall, coordinator for rubber, "my personal appreciation and that of my associates for a marvelous job. Unfortunately, as you so well know, the demands for this material are terrific. Your industry through the Automotive Safety Foundation has agreed to continue the drive for scrap materials. Your organization has learned how, and it is our sincere hope that they will assist the automobile and rubber industries, who are joining them now, to carry on."

"The petroleum industry," said Donald M. Nelson, chairman, War Production Board, "deserves enthusiastic congratulations and commendations for its splendid work as well as for its accomplishments.

"Having shown again their great ability to do a fine job in this emergency, it is hoped that the oil-company organizations and dealers throughout the country will continue with the same spirit and energy in support of the over-all national salvage program. The necessity for continued efforts to bring in all metals and remaining available rubber is vital to keep essential war-production plants running to capacity."

Praising the oil industry for its success in the nation-wide campaign for collection of reclaimable rubber, Petroleum Coordinator Harold L. Ickes urged that industry to cooperate wholeheartedly in the War Production Board's sustained program for collecting scrap metal and other urgently needed war materials.

He said:

"The petroleum industry has demonstrated repeatedly its ability to mobilize its great field forces toward the accomplishment of needed and worth-while projects. This the industry has just done again in the scrap-rubber drive.

"The Government has launched the National Salvage Program to recover any remaining scrap rubber and also to collect, principally, metal scrap and other vitally necessary war-production materials.

"As Petroleum Coordinator for War, I urge the active interest of the oil industry and I am confident that the oil-company organizations and dealers will provide much of the energy and stimulating ability so necessary for the positive success of the Salvage for Victory Program."

THE WHITE HOUSE
WASHINGTON

July 22, 1942

Dear Mr. Boyd:

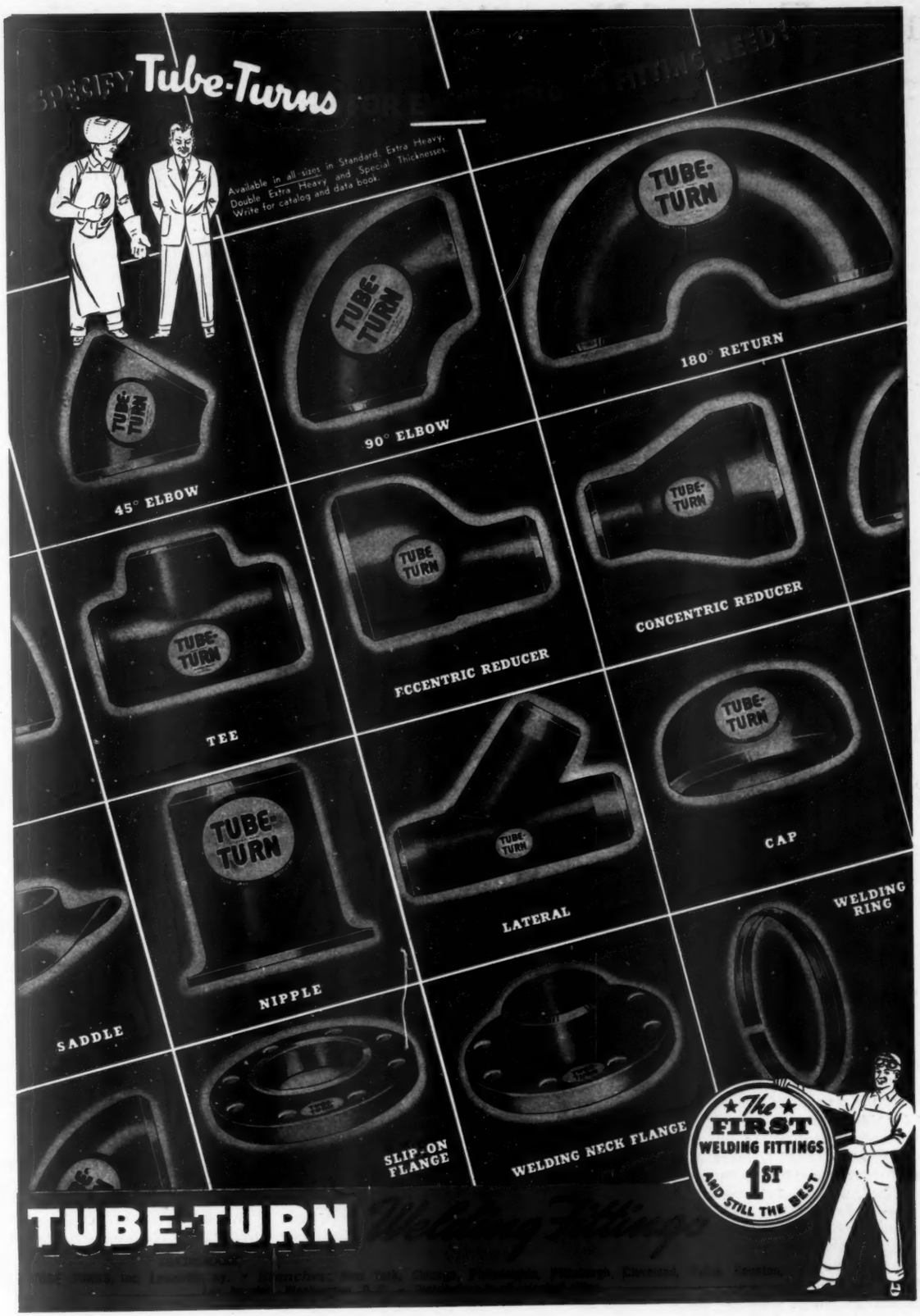
Please accept my hearty congratulations on the success of the campaign for the collection of scrap rubber. It is most gratifying to learn through your final report that the Nation's stockpile has been increased by more than four hundred thousand tons and that the average contribution was almost seven pounds for every man, woman and child.

You and your associates have done a grand job and I want you to know that your government appreciates the splendid results achieved. My heartfelt thanks to you and to all who work with you.

Very sincerely yours,

Franklin D. Roosevelt /s/

The president's appreciation for success of rubber drive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NIPPLE
SADDLE
WELDING RING
SLIP-ON FLANGE
WELDING NECK FLANGE
The FIRST WELDING FITTINGS 1ST AND STILL THE BEST
TUBE-TURN

Main Soviet Oil-Supply Lines Remain East of Nazi Advance

THE German advance in the Don Basin is seriously menacing the oil supplies of the Soviet Union, although it has not greatly interfered with production and transportation as yet. At the time the Nazi advance was halted last fall and the Germans were driven from Rostov they had already straddled the northern end of a pipe line which extends from the Caspian north of the Caucasus Mountains and passes through Rostov to Nikitovka. Although expelled from Rostov, the Germans maintained their position near Nikitovka so that supplies along this line have probably been interrupted throughout the winter and spring.

This northern line does not serve the Baku fields but delivered oil from Grozny and the Daghestan fields north of the Caucasus. A spur joined the Maikop field to the system and connected with Tuapse on the Black Sea. Production from these districts totalled about 81,500 bbl. daily and it is to be presumed that the line is reversed so that this oil can be delivered to the Caspian.

The advance to Rostov has brought the Germans closer to the Maikop fields but the present direction of the drive eastward suggests that the German high command is interested primarily in separating the Caucasus fields from the rest of Russia, rather than in making a direct attempt to capture the fields themselves. If the Caucasus is cut off, then capture of the fields would be a simpler matter, although the Soviet scorched-earth policy might result in the loss of oil to the Russians but in no gain in supplies for the invasion army.

A second pipe-line serving Baku passes to the south of the Caucasus to Batum. The fall of Sevastopol reduced the demand for oil from this line. In the same way little oil is required from the western terminus of the northern line to Tuapse from Maikop.

The drive on Stalingrad will seriously affect supplies of oil transported from Baku and Grozny by way of the Volga. However, the railroad from Astrakhan at the mouth of the Volga to Moscow bypasses Stalingrad, going direct to Saratov and passing about 100 miles east of the Volga in the latitude of Stalingrad. There is also a pipe line terminating at Gurlev and Koschagil on the Caspian nearly 200 miles east of Astrakhan which connects with the Ural district. The Ural River can also be used at least as far as Uralsk, 250 miles east of the Volga. Finally, if all of these lines are broken, the Trans-Caspian railroad could transport limited quantities of oil, although the route would hardly be practicable as it goes far to the east before meeting a railway line into European Russia.

Thus the peril to the Soviets by the German advance is not an immediate shutting off of supplies but a piecemeal strangulation. The immediate objective, namely the capture of Stalingrad, would affect only the slow-moving barge transportation up the Volga. The capture of Astrakhan or Saratov or the straddling of the railroad east of the Volga would be of greater import. If the German advance could be carried as far as the northeast corner of the Caspian, then the Russians would be entirely dependent on their production in the Ural region where output has been kept secret but which is believed to be in excess of 75,000 bbl.

Footnote: Maps and data on the Soviet oil supplies and the German threat to these supplies will be found in The Oil and Gas Journal, December 25, 1941, Page 77 and June 4, 1942, Page 20.

Abnormal Oil-Shipping Costs to Be Absorbed After August 1

WASHINGTON, D. C.—Secretary of Commerce Jesse H. Jones has announced that the Defense Supplies Corp. would absorb abnormal costs of transporting petroleum products to the Atlantic seaboard beginning August 1.

Few details were revealed beyond the fact that the costs to be covered will be approved by the Office of Petroleum Coordinator, Office of Price Administration, and Office of Defense Transportation, and will apply to shipments from the Middle West as well as from the Southwest.

This action apparently has weakened the support of members of Congress from eastern states for the Connally-Steagall bill to create a War Petroleum Corp. Although some members from oil-producing states are still seeking some aid to producers and refiners whose business has been reduced because of the war, there is little widespread support for this measure.

In spite of the endorsement of the bill given by Petroleum Coordinator Harold L. Ickes, a resolution opposing it was adopted by the Petroleum Industry War Council, and the Independent Petroleum Association of America has filed a statement with the House committee on banking and currency expressing doubts that this bill is the best solution to problems now facing the industry.

Meanwhile, the entire subject of added costs and wartime dislocations thrust upon the oil industry is being studied intensively by a special committee of 12 created by the PIWC. This group, headed by Dr. John D. Gill of Atlantic Refining Co., represents all segments of the oil industry and has broad powers to draft a program and recommendations. It is now at work in New York City and as soon as it is ready to report the PIWC will be called together to discuss its proposals. Its scope is much wider than the cost of shipments to the East Coast area, and includes wartime problems of producers, refiners and marketers in all sections of the country. Many suggestions have been made to it, many of them calling for legislation, and it is anticipated that a program will be worked out which will obtain the support of the entire industry.

Secretary Jones announced that the arrangement is to become effective on shipments made on or after August 1, 1942, and to continue until canceled by mutual agreement or by 30 days' notice from Defense Supplies Corp.

This action has been taken in order to obtain the maximum production of petroleum products necessary to the war effort and civilian economy.

Defense Supplies Corp. has agreed to pay abnormal transportation costs incurred in moving such products from the Gulf Coast area to the Atlantic seaboard, where a serious shortage exists because of submarine warfare. The abnormal costs are occasioned by the necessity of transporting such products by rail, truck and pipe line, rather than by tanker. It is hoped that by this arrangement the shortage on the East Coast will be alleviated, at least in part.

Mr. Jones stated that Defense Supplies Corp. has also agreed to pay additional costs which might result from the necessity of obtaining such petroleum products in the Middle West instead of the Southwest, which is the customary source of supply. This will make possible the most efficient use of existing transportation facilities.

D. E. Buchanan Made Director In Charge of District 3

WASHINGTON, D. C.—D. E. Buchanan of Tulsa, president of Hanlon-Buchanan, Inc., has been named director of District 3 of OPC in charge of the Houston, Tex., office. He will continue as the District 3 director for natural gas and gasoline.

DARST E. BUCHANAN

Mr. Buchanan succeeds Grady H. Vaughn who has been transferred to Washington to organize a program for reclaiming oil-field equipment.

E. O. Buck of Houston succeeds Mr. Vaughn as district director of production.

Kinsolving Becomes Associate Chief of OPC Transportation

WASHINGTON, D. C.—Appointment of W. C. Kinsolving, of Beaumont, Tex., as associate director of transportation for the Office of Petroleum Coordinator for War, was announced last week by Deputy Coordinator Ralph K. Davies.

R. B. McLaughlin, former associate director, has returned to his post as vice president and assistant manager of both the Texas Pipe Line Co. and the Texas-New Mexico Pipe Line Co., after having assisted importantly in developing the emergency program for movement of oil to the East Coast shortage area.

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TYPE G-MV ANGLE COMPRESSOR

by Cooper-Bessemer

ENGINE BUILDERS SINCE 1833

Recheck of Scrap-Metal Stock Is Launched by Oil Industry

(Continued from Page 59)

collected, largely on the idle time of the men already employed.

In cases where there are appreciable amounts of the various types of scrap, this has been segregated by piling in different heaps depending on whether the scrap is cast iron, scrap steel, wire rope, sheet steel, brass, copper, aluminum, lead, tin, rubber, etc. In this way the operator has obtained more from sale of his scrap than he could have otherwise, since cast iron brings more than scrap steel, wire rope brings less, etc.

In some cases, where the exact type of alloy steel is known, as with drill collars or tool joints, the segregation can be carried even further. However, because of its nature and quantity, most oilfield scrap steel and iron cannot be separated so thoroughly. If segregation is not practicable, all the scrap iron and steel can be sold at the scrap dealer's rate for unclassified material.

Some of the large companies have facilities for preparing the scrap for shipment, but few operators have either the equipment or knowledge. Usually the scrap dealer has had to prepare it, by cutting larger pieces to maximum permissible charging-box size (18 in. by 5 ft. for most grades). Sheet scrap such as auto bodies, auto fenders, oil drums, license plates, etc., have to be concentrated by pressing and bundling to facilitate handling, and few if any operators have such equipment. The preparation of the scrap by shearing and pressing is a specialized job which the scrap dealer usually performs.

That is one reason why the "junk dealer" is so important in the current scrap-collection program. Another is that the dealer quickly assembles sufficient quantities from various operators and other sources to make up a carload of a certain type of scrap. While an operator might wait several weeks to collect a ton of one type, a dealer might have gathered and shipped a carload. Every few pounds received immediately are more beneficial to the war program than scrap held indefinitely on a lease or yard until bulk is accumulated.

Most operators have ceased to worry about the dealers' hoarding scrap or profiteering from its sale. Today the junk dealer is one of America's most valuable fighters. For generations he has been keeping America's mills rolling out steel, and now he is doing an even better job of it. Of course scrap piles up in his yard. A good wartime junk yard will always have a certain amount of scrap on hand which is being prepared for shipment or collected so vital shipping space can be used economically. Nor will the dealer hold your scrap for higher prices. It is under ceilings stating maximum prices delivered at the mills. Under present conditions, with the greatest effort being exercised on the collection of scrap in quantities, it is usually at the mills within 2 or 3 weeks.

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Annual A.P.I. Meeting to Be at Palmer House, November 9-13

The American Petroleum Institute's twenty-third annual meeting will be held at Chicago on the dates originally scheduled, November 9 to 13, but at the Palmer House instead of the Stevens Hotel, Pres. William R. Boyd, Jr., reports.

The Stevens Hotel recently was requisitioned by the Government for the Army Air Corps.

"This will be strictly a war convention," Mr. Boyd said. "The Institute's annual meetings always have been working meetings, entirely different from the usual concept of an American business man's convention, and now the far-reaching problems of war make it more important than ever to assemble the oil industry's workers periodically for an analysis of common difficulties."

Plans for the meeting have not yet been completed, but it is expected that a preliminary program will be distributed some time early in the fall, Lacey Walker, secretary-assistant treasurer, reports. Only those committees which are working on problems contributing in some measure to the industry's war effort will convene during the meeting, and technical group sessions will hear and discuss papers on the wartime progress in the various branches of the industry.

DEATHS

ORVAL MANNSCHRECK, district land man in Kansas for Mid-Continent Petroleum Corp., died at his home in Wichita, Kans., last week end, following an illness of a year. Mr. Mannschreck formerly lived in Tulsa.

A. H. FLAHERTY, 55, pioneer drilling contractor in the Mid-Continent field, died last week at a hospital in Midland, Tex. Mr. Flaherty operated as Krupp & Flaherty, Inc.

WILLIAM FREDERICK EPLER, 67, pioneer drilling contractor of Tulsa, died at his home last week of cerebral hemorrhage. He was ill less than 24 hours. Mr. Epler came to Oklahoma in 1912, at the opening of Glenn Pool. He followed the oil booms after his return from Australia, where he went in 1900, and returned to Oklahoma from Illinois some years later. His widow, two sons and two daughters survive.

THOMAS R. CLARE, 67, retired oil-well worker of Bradford, Pa., died of a heart attack while cleaning up the debris deposited by the recent flash flood in northeastern Pennsylvania. Two daughters and four sons survive.

BRUNO FRANZ KAPS, 39, Wooster, Tex., an employe of the Humble Oil & Refining Co.'s Baytown refinery, died at a Goose Creek, Tex., hospital last week. His widow and two daughters survive.

DR. BRUCE G. BALDWIN, 29, head of the lubricant section of the research division of the Esso Laboratories at Bayway, N. J., was fatally injured in an Army tank accident early this month, and died shortly afterward in an Elizabeth, N. J., hospital. He was engaged in experimental work on the tank, when the accident occurred. His widow and two children survive.

M. G. EITELMAN, who retired as executive vice president of Barnsdall Oil Co. in 1935 after suffering a heart attack, died Sunday at his home in St. Petersburg, Fla. Mr. Eitelman was a native of Texas, and entered the oil business in 1902. He organized the marketing division of Barnsdall in 1921, with offices in Kansas City, and then came to Tulsa, spending more than 15 years here. His widow and two sons survive.

ENGINEERS OF GULF OIL CORP. HOLD 2-DAY CONFERENCE . . .

A 2-day conference of engineers of the Gypsy Division of Gulf Oil Corp. was held in Tulsa, July 21 and 22. Engineers outside Tulsa attending the meeting were from the district offices in Drumright, Burbank, and Seminole, Okla.; Chase, Kans.; Hoggs, N. M.; Centralia, Ill., and Clare, Mich. The accompanying picture was taken at the dinner held July 21 at the Tulsa Club. Rush Greenslade, vice president of the company, spoke at the dinner, at which S. G. Sanderson presided as toastmaster. Those in attendance at the dinner were:

Production department: S. G. Sanderson, A. M. Bell, H. C. Davis, H. F. Brindel, H. R. Auerswald, L. L. Gray, D. O. Barrett, H. A. Hodgson, K. B. Barnes, R. L. Clarke, T. I. Briggs, Milo Collins, A. C. Godbold, J. P. Wible, Rex W. Woods, T. J. Slavik, L. M. Browne, M. E. Goodner, R. G. Harper, F. D. McClure, W. L. Perryman, S. H. Pope, B. L. Remick, W. L. Rushmore, C. B. Schofield, E. H. Short, M. H. Stacy, B. W. Whiteley. Production department field engineers: E. W. Brake, H. F. Swannack, E. J. Gallagher, H. A. Olivey, Eugene Hosford, W. D. Mitchell, M. N. Palmer, J. A. Gray.

Executive department: Rush Greenslade, P. H. Bohart, R. S. Harrison, J. D. Iams, R. C. Frederick, Donahue Langworthy. Geological department: W. B. Wilson, W. E. Bernard, L. C. Case, P. H. Reisher. Purchasing department: V. C. Fuller, K. K. Siehr. Accounting department: D. B. Catterlin, E. D. Loughney. Pipe-line department: J. R. Murphy, P. L. Reichard, W. J. Wilkins. Leasing-scouting: F. P. Rushmore.

Natural Gas News

Montana-Dakota Company Rates Will Be Investigated

WASHINGTON, D. C.—The Federal Power Commission last week announced its order instituting an investigation of the Montana-Dakota Utilities Co. for the purpose of determining whether it is a natural-gas company within the meaning of the Natural Gas Act, and whether any rates, charges, or classifications subject to the commission's jurisdiction are unjust, unreasonable, or discriminatory.

The investigation was instituted on the commission's own motion following a complaint filed December 6, 1941, by the Mondakota Development Co. of Billings, Mont., alleging that the rates tendered by defendant for the transportation of natural gas for complainant are unjust, unreasonable and unduly discriminatory, and requesting an order of the commission requiring defendant to transport natural gas for complainant at rates determined by the commission.

According to the complaint, the development company is the owner and producer of natural gas from wells situated in the Baker-Glendive gas field in Montana and has customers at or near Rapid City, Sturgis, Deadwood, and Belle Fourche, S. D.; Bismarck, N. D.; Miles City and Glendive, Mont.; and in other communities, who are ready and willing to purchase complainant's natural gas. The complaint states that natural gas can readily be transported and delivered to these customers through Montana-Dakota's pipe line extending to the cities; and claims that complainant, under the provisions of Section 28 of the Act of Congress of February 25, 1920, as amended August 21, 1935 (Leasing and Right-of-Way acts), is entitled to have natural gas produced by it transported through defendant's pipe line at reasonable and nondiscriminatory rates to be established by the Federal Power Commission. The complain also contends that the right-of-way for Montana-Dakota pipe line was granted by the secretary of the interior upon the express condition that the line should be operated as a common carrier and that Montana-Dakota as owner should accept and transport natural gas produced from public and private lands in the vicinity of the line without discrimination.

Ohio Fuel's Transportation Rates to Be Probed by FPC

WASHINGTON, D. C.—The Federal Power Commission has instituted an investigation of the Ohio Fuel Gas Co. for the purpose of determining whether the company is a natural-gas concern within the meaning of the Natural Gas Act, and whether any of the company's rates or charges are unjust, unreasonable, unduly discriminatory, or preferential.

By an order dater March 17, 1942, Ohio Fuel was required to show cause why the commission should not determine that the rate agreement with Anchor Hocking Glass Corp. is unjust, unreasonable, or unduly discriminatory, and why the agreement should not be made the subject of an investigation.

The rate agreement between the two companies, which was filed with the commission on January 22, 1942, and designated as the Ohio Fuel Gas Co. Rate Schedule FPC No. 30, stipulated that transportation charges, including certain standby and deficiency service, should be 8 cents per 1,000 cu. ft. The transmission distance is some 57 miles, and the average transportation rate is 1.40 mills per 1,000 cu. ft. per mile. Ohio Fuel transports natural gas for an affiliate, Northwestern Ohio Natural Gas Co., at an average rate of 0.75 mill per 1,000 cu. ft. per mile, for the River Gas Co. at an average of 1.13 mills, and for the United Fuel Gas Co., another affiliate, Ohio Fuel transports gas 150 miles at no charge whatsoever. This wide diversity in transportation charges led the commission to note that the average rate of 1.40 mills per 1,000 cu. ft. per mile is unreasonable and to issue the show-cause order.

United Gas Seeks Permit to Increase Long Lake Line

WASHINGTON, D. C.—The Federal Power Commission Monday announced a hearing in Washington, August 3, on an application by the United Gas Pipe Line Co., for authority to construct 38 miles of 12¾-in. line to loop its facilities from the Long Lake field to a point near Strose, La., to connect with the company's Baton Rouge-New Orleans trunk.

Original Cost of East Ohio Gas Properties Requested

WASHINGTON, D. C.—The cities of Cleveland, Euclid, and Lakewood, Ohio, have been permitted to intervene in the proceedings before the Federal Power Commission on the application of the East Ohio Gas Co. for a certificate of public convenience and necessity under Section 7(c) of the Natural Gas Act, as amended, for continued operation based on bonafide operation on February 7, 1942.

The three cities also filed complaints asking that the Commission order East Ohio to show cause why it should not ascertain and submit the original cost of its properties in compliance with various orders of the commission addressed generally to all natural-gas companies subject to the commission's jurisdiction.

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Recycling News

East Texas Plants Reduce Production of Motor Fuel

Sixteen recycling and repressuring plants in the East Texas field produced 6,477 bbl. of gasoline daily in June against output of 8,747 bbl. daily in May. The plants processed 564,252,000 cu. ft. of gas in June against 587,104,000 cu. ft. in May.

The reduction in output reflects voluntary curtailment of operations by some of the plants and a sacrifice in yield to obtain the most desirable fractions in others.

The daily average output of all products during June was 15,633 bbl., against 17,207 bbl. daily in the previous month. The June figures included daily production of 7,372 bbl. of crude oil or condensate against 6,642 bbl. in May; 176 bbl. of kerosene against 456 bbl.; 1,424 bbl. of butane against 1,258 bbl., and 184 bbl. of "other products" against 110 bbl.

Natural Gasoline

Production Curve Resumes Upward Trend As Southern Operators Increase Yields

PRODUCTION of natural gasoline and related products resumed its upward trend in May when daily average output was 217,000 bbl., compared with recovery of 209,000 bbl. daily in April. Average production for the first 5 months is 227,000 bbl. daily against 162,000 bbl. for the same period a year ago.

Most substantial increases in production were reported from the Texas Gulf Coast, East Texas and the Inland Louisiana districts.

The output of liquefied refinery gas increased from 12,768,000 gal. in April to 21,798,000 gal. in May. However, the actual gain, if any, the Bureau of Mines points out, was much less as May was the first month that liquefied refinery gas has been clearly segregated from similar products.

Production of isobutane at natural-gasoline and cycle plants totaled 9,534,000 gal. in May, an increase of 1,176,000 gal. over April's output. Output of all other liquefied petroleum gas at natural-gasoline and cycle plants during May totaled 48,426,000 gal., an increase of 3,234,000 gal.

Demand for natural gasoline, cycle condensate and liquefied petroleum gas during May totaled 279,258,000 gal., compared to 256,368,000 in May and with 202,818,000 gal. for the fifth month last year.

Comparative production figures for natural gasoline and cycle condensate are shown by districts in the accompanying table.

NATURAL-GASOLINE PRODUCTION

(Data in thousands of gallons)

	May, 1942	Apr., 1942	Jan.-May 1942	Jan.-May 1941
East Coast				
Appalachian	9,748	10,683	54,514	40,945
East Ohio	456	602	3,438	3,463
Other	9,292	10,081	51,076	37,482
Ill., Mich., Ky.	13,921	13,999	63,979	24,472
Oklahoma	36,527	34,630	182,102	154,123
Oklahoma City	4,799	4,692	27,392	29,589
Seminole	12,012	11,020	59,329	44,452
Rest of state	19,716	18,918	95,381	80,082
Kansas	5,994	6,000	33,911	30,971
Texas	126,925	114,311	659,184	441,270
Gulf	29,142	25,902	158,014	103,467
East Texas	23,122	16,046	112,395	67,622
Panhandle	33,712	31,691	176,048	117,241
Rest of state	40,949	40,672	212,727	152,940
Louisiana	23,313	19,337	118,889	47,597
Gulf	5,966	5,240	27,044	(*)
Inland	17,347	14,097	91,845	(*)
Arkansas	3,555	3,336	16,054	14,208
Rocky Mountain	10,085	9,943	51,351	39,710
New Mexico	6,863	6,717	34,606	23,605
Other	3,222	3,226	16,745	16,105
California	52,088	50,555	258,558	236,796
Kettleman Hills	11,378	11,077	56,832	48,124
Long Beach	7,506	7,325	36,719	36,684
Ventura Avenue	5,492	5,088	26,774	23,781
Rest of state	27,712	27,065	138,233	128,207
Total	282,156	262,794	1,438,542	1,030,092
Daily average	9,102	8,760	9,527	6,822
Total (thou. of bbl.)	6,718	6,257	34,251	24,526
Daily average	217	209	227	162

*Not available.

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Air, Fuel Cleaners—Clean regularly.

Oil, Diesel Fuel (on Diesel models) Filters—Clean regularly; replace filter elements every 100-120 hours of operation.

Oil Screen—Clean whenever oil pan is removed.

Gasoline Strainer—Clean at least once a month.

Oil Change—Every 100-120 hours of operation.

Carburetor—Remove, clean fuel screen occasionally; check fuel bowl cover screws regularly—keep them tight.

Magneto—See instructions in operator's manual on lubrication, distributor, adjusting points, timing, etc.

Cooling System—Always use clean water; clean regularly; adjust fan belt regularly for correct tension; replace fan belt when badly worn; keep water pump packing nut tight enough to stop leaks; install new packing when needed.

Spark Plugs—Remove, inspect, clean every 200-300 hours of operation.

Clutch—Inspect regularly to maintain correct clearance between throw-out bearing and release fingers.

Storing, Housing—Keep engine in dry, protected place when not in use.

Read, study operator's manual for other money-saving suggestions.

MAINTENANCE

Sleeves, Pistons—If and when replacement is needed, matched sets can be quickly, easily installed.

Fuel Injection Pump (on Diesel engines)—Entire unit can be replaced easily. Always use clean fuel oil.

Crankshaft Bearings—Replace when needed; no fitting or reaming necessary.

Valve Grinding—As needed.

FOR VICTORY, oil must keep flowing, engines must keep pumping. Proper care and operation of engines is of vital importance because new ones are harder and harder to get.

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180 North Michigan Avenue Chicago, Illinois

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INTERNATIONAL Industrial Power

Directory of Government Oil Agencies

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New Interior Building, Eighteenth and C Streets, N.W. Phone REpublic 1820

COORDINATOR'S OFFICE

	Rm.	Ph.
Ickes, Harold L., coordinator	6156	5000

DEPUTY COORDINATOR'S OFFICE

Davies, Ralph K., deputy coordinator	6654	3831
Allen, Robert E., assistant deputy	6647	3334
Batzell, Elmer E., assistant deputy	6070	2181
Brown, Bruce K., assistant deputy	6646	2066
DeGolyer, E. L., assistant deputy	7516	4459
Frey, Dr. John W., assistant deputy	4345	4272
Huff, William F., assistant deputy	7352	3052
Sessions, Gordon M., special assistant	7519	4446
Thomas, J. Elmer, assistant deputy	7442	4735

PRODUCTION DIVISION

Knowlton, D. R., director	7410	4861
Schilthuis, Ralph J., assistant	7410	2907
Bauchens, Fred C., development	7417	4509
Crowell, Thomas L., allocations	7419	4507
Dumbros, N. G., reserves	7419	4507
Ellis, George L., spacing	7422	4469
Flood, H. Lee	7418	4831
Gordon, J. E., development	7411	4826
Heston, J. E., production	7416	4689
Hoffman, Malvin G., material	7417	4509
Hughes, Richard V.	7422	4469
McClintock, C. B.	7419	4507
Morton, Randall R.	7418	4831
Palmer, Frank E.	7418	4831
Pearson, L. H., abandonments	7413	4826

REFINING DIVISION

Gary, Wright W., director	6637	3233
Bailey, Douglas P., operations section	3213	4877
Cragin, Robert B., supply section	3218	3237
Miller, Max B., construction section	7443	4560
Parkhurst, George L., new facilities	3229	3941
Robinson, P. M., assistant director	6644	4786

TRANSPORTATION DIVISION

Parten, J. R., director	6629	4418
Archbold, S. D., inland waterways	3647	4333
Cowles, L. R., assistant director	6620	3658
Eberle, W. C., marine section	6622	4019
Kinsolving, W. C., associate director	6629	3557
Lockett, C. L., materials section	6624	4627
Sears, D. P., pipe-line section	6626	4833
Turner, John A., motor transport	6619	4300
Wilson, Boyd, rail section	6623	4620

NATURAL GAS-NATURAL GASOLINE DIVISION

Poe, E. H., director	7423	4860
Ducker, R. W., natural gas	7423	4774
Lange, Walter R., production	7512	4744
Martin, J. W., liquefied gas	7424	4871
Pew, James E., natural gasoline	7423	4871
Raigorodsky, P. M., assistant director	7423	4774

MARKETING DIVISION

Collier, Robert T., director	4257	4646
Arnold, D. C., asphalt section	4244	2787
Best, Paul A., assistant director	4258	3518
Cooper, Howard, lubes and greases	4247	4313
Ellender, J. H., motor-fuels section	4258	4434
Foulds, Ned F., fuel-oil section	4257	4797
Harpster, W. C., burner conversion	4253	4440
Juliber, E. B., motor-fuel delivery	4248	4709
MacMillan, Robert, materials	4248	2781
McGarey, T. F., fuel-oil delivery	4253	4440
Mitchell, T. C., asphalt section	4242	2715

LEGAL DIVISION

Marshall, J. Howard, chief counsel	6649	4100
Avery, W. E., marketing	4245	2978
Friedman, R. E., assistant chief	6424	668
Hudson, D. M., assistant chief	6422	793
Jones, John F., production	7415	3298
Leonard, J. H. F., refining	3211	4832
Levy, Adolph, general	6426	4838
Shadle, Webb, principal attorney	7448	4834
Wolf, Justin R., allocations	6070	2130

MATERIALS DIVISION

Orton, Greer W., director	7314	4585
Bell, R. R., export section	7322	2796
Breyfogle, L. W., surveys	7251	3683
Hansen, H. R., excess stocks	7316	4622
Harmon, I. G., WPB relations	7320	3430
Kent, H. M., scrap—salvage	7318	4354
McCarty, J. H., domestic	7318	4354

PETROLEUM SUPPLY DIVISION

Minckler, Robert L., director	7450	4834
Saver, R. C., assistant director	7450	2083

FACILITY SECURITY DIVISION

Mason, W. D., director	3641	4172

FOREIGN DIVISION

Duce, James T., director	4442	4417
Ballou, G. T., refining	4448	4788
Chapman, A. H., assistant director	4442	3200
Crampton, W. D., transportation	4448	4788
Kurtz, J. D., transportation	4448	4891
Nuland, L. H., production	4444	2534
Snodgrass, C. S., British Empire	4450	4789

INFORMATION DIVISION

Yocom, Herbert A., director	7513	3844
Caminita, Ludwig, Jr.	7517	4650

ADMINISTRATIVE DIVISION

Crosthwait, S. W., executive officer	6415	4363
Thompson, Glenn D., assistant	6412	4634

DIVISION OF RESERVES

Heroy, William B., director	7514	4459

RESEARCH DIVISION

Swanson, E. B., director	7315	649
Ambrose, O. S., assistant	7317	4777
Wye, Ernest A., Jr.	7321	4785

SUPPLY AND DISTRIBUTION BOARD

Lange, Walter R., tanker expert	7512	4744
Norris, T. H., assistant	7510	4744

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Pyron, Gen. W. B., liaison agent	3062	6044

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Marketing Division—Charles A. Lockard, acting district director; Colin A. Campbell, marketing assistant; William I. Wait, marketing assistant.

Materials Division—R. M. Dinges, district director.

Administrative Division—Walter J. Heison, office manager.

Foreign Division—Emerson M. Butterworth, special representative; Norval E. Baker, principal analyst.

Legal Division—Charles L. Harding, district counsel.

DISTRICT 2

Suite 1336, 120 South La Salle St., Chicago, Ill.

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Field Specialists—Garvin D. Chastain, petroleum production specialist, Mount Pleasant, Mich.; Joseph E. Washington, petroleum engineer, Mount Vernon, Ill.; David M. Logan, senior petroleum production specialist, Oklahoma City, Okla.; Robert C. Mitchell, petroleum production analyst, Wichita, Kans.

Marketing Division—Evart E. Overton, acting district director.

Division of Reserves—Frank P. Donahue, conservation engineer.

Transportation Division—Walter DuMont, district director.

Legal Division—Charles K. Schwartz, district counsel.

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Natural-Gas and Natural-Gasoline Division—Mark S. Patton, assistant chief.

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245 Mellie Esperson Building, Houston, Tex.

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Administrative Division—Albert R. Novak, office manager.

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855 Subway Terminal Building, 417 South Hill Street, Los Angeles, Calif.

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Grenz, C. W., distribution section	6315	73584
Joel, Michael, administrative officer	6313	5389
Joyes, W. B., crude-oil section	6316	4403
Kellogg, C. M., refining section	6315	73585
Salmon, J. H., associate price executive	6304	6376

(Continued on Page 151)

Production for First Half of Year Approaches 1940 Peak

By W. V. HOWARD

Production for the first half of 1942 was 678,934 bbl., representing an increase of 17,491,000 bbl. over the corresponding period of 1941. Mississippi and Kansas increased their production by an amount approximately equal to the total increase.

Beginning on Page 91 production data are presented for the oil fields of the United States. New tables have been prepared showing the production of all fields for each 6-months' period from the first half of 1939 to date together with the number of producing wells at different periods. This enables the reader to form an opinion regarding the status of each field and its probable future course.

During the first half of 1942, many fields show anomalous declines because of restrictions placed on production due to disorganized transportation.

CRUDE-OIL production during the first half of 1942 amounted to 678,934,000 bbl., representing an increase of 17,491,000 bbl. over the corresponding period in 1941 but falling short of the peak half year at the beginning of 1940 by 5,781,000 bbl. In 1941, however, production increased rapidly during the second half year, bringing production for the full year to an all-time high. The trend in 1942, as indicated by OPC quotas for August, may parallel the course of 1941 so that this year will probably again be a peak year.

Production in the different states presents many anomalous features as influenced by local variations from normal demand occasioned by the transportation disorganization of this year. Of the six largest producing states, three show a decline in production from the first half of last year. Texas, as usual well in the lead, shows a loss in production of nearly 2 per cent in spite of the fact that more new oil was made available in Texas by reason of discoveries and extension than in any other state.

California shows a small gain in production while Oklahoma, in third place, suffered a 5 per cent loss. In the case of Texas the loss in output was due to more stringent proration to prevent waste in storage of unmarketable oil, but in Oklahoma the decline may be considered to be evidence of declining available supply.

Louisiana Rises to Fourth Place

New important production kept Louisiana on the upward trend it has followed since 1939 and a drop in Illinois fields permitted Louisiana to take fourth place. Increasing demands from the Great Lakes and Mid-Continent refineries for oil, coupled with Illinois' and Oklahoma's decline, gas Kansas a chance to increase its production to peak levels. In seventh place was Wyoming with an increase which, coupled with New Mexico's large decline, placed it one place higher in rank. Wyoming's rapid rise is indicated by the fact that the past half year's production is greater than that of the full year of 1936. Eighth place was held by a newcomer, Mississippi, which had no production in 1938 but which had an average of over 80,000 bbl. daily during the past half year. New Mexico, by reason of its remoteness from markets and consequent severe proration, suffered a decline of over 20 per cent in production and dropped from seventh place last year to ninth. The anomalous situation set up by the tanker shortage is plainly evident when it is considered that reserves in New Mexico amount to some 10 times those of Mississippi while production is considerably less.

In its rise, Mississippi also passed Arkansas, Michigan and Pennsylvania, the two states last named also having changed their relative position due to the rapid development of Reed City, Headquarters and Winterfield. In the group of minor producing states, Montana assumed thirteenth place, passing Indiana and the relative positions of the other states remained unchanged.

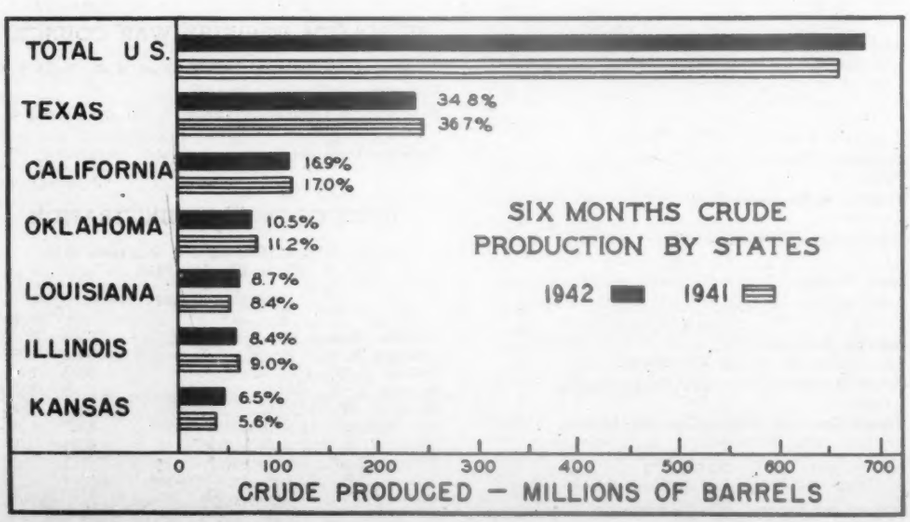
Some of the conditions responsible for production changes so far this year are definitely temporary but some of the postwar problems which the industry will have to meet are clearly indicated by the production trend. Oklahoma and Illinois are declining steadily and discoveries in each state, though important, are not sufficient to counteract the downward trend. Mississippi and Kansas, whose combined increase in production is greater than that of the country as a whole, are obviously benefiting from the inability of their competitors to meet demands. However, as has been indicated, Mississippi is practically a one-field state, and it is almost certain that production for the second half year will fall substantially below current levels. Kansas can meet additional demands but it will be increasingly necessary to call on Louisiana and Arkansas for greater output to offset the expected decline from Mississippi. These states have reserves which are already less than normal, as expressed in terms of years' supply, so that Texas and New Mexico will undoubtedly be called on to produce continually greater portions of the nation's crude supply.

This will call for the gradual extension of lines westward, not only to these states but to the Rocky Mountain district. Under normal conditions, demand from these areas would increase gradually but under war conditions they will probably continue to show a decline until shortages become acute, transportation facilities are compelled to expand and production will increase sharply. Already, the Texas Panhandle has shown some indication that this is taking place.

Major Oil Fields

The trend of production from the major fields presents some interesting facts. Of the current 75 largest fields, 7 were either not on production or had a very small output in the first half of 1940 and of these 4 were either undiscovered or were still quite small 1 year ago. Those who view the near future pessimistically and consider that there is an impending shortage might try to remember whether 2 years ago they would have predicted that nearly 10 per cent of the largest producers of this year would be fields which then were either unknown or comparatively recent discoveries. On the other hand, if it is remembered that six of these seven fields are in Illinois and Michigan where declines are as rapid as rises, the pessimist might point to Salem which dropped more than 50 per cent a year during the past 2 years and also fell from second to ninth place in a single year.

Considering the 75 largest fields as a whole, without reference to proration, or the lack of it, we find that the 75 largest fields of this year provided 55.1 per cent of the country's production



and the same proportion in the first half of 1940. That is, the declines in many fields have been offset by increases in others; in some cases, as has been pointed out, from zero. Last year the 75 largest fields produced 55.3 per cent of the nation's oil and in 1940 that year's crop produced 60.5 per cent. Thus, dependence on the major fields is gradually declining a fact which suggests a rather healthy condition.

In considering the largest fields, however, there is no minimum limit placed on the size of the fields. Considering major fields from another angle, it may be pointed out that this year there were 79 fields yielding more than 10,000 bbl. of oil daily, which produced 56.2 per cent of the nation's total. In mid-1941 there were 73 fields above this level which produced 54.7 per cent of the country's oil and in 1940, there were 70 fields, yielding 57.8 per cent of the total production.

The really big fields, making over 80,000 bbl. a day, have shown the largest relative drop. In 1940 the United States depended on four fields, East Texas, Salem, Oklahoma City and Wilmington, for more than one-fifth of its oil. Today, two of those four fields have dropped below the 80,000-bbl. level and Tinsley has temporarily risen above it. The increase in the number of 10,000-bbl. fields reflects a much better statistical position than that of 1940.

PRODUCTION MAJOR FIELDS

(In thousands of barrels)

Field and state—	First 6 months 1942	First 6 months 1941	First 6 months 1940	Cumulative to July 1, 1942
East Texas, Texas	57,641	65,243	71,857	1,786,155
Wilmington, California	16,181	14,876	15,175	156,322
Tinsley, Mississippi	15,198	4,144	1,276	34,861
Oklahoma City, Oklahoma	13,985	16,320	17,920	570,902
Midway-Sunset, California	9,981	8,512	9,468	923,639
Louden, Illinois	9,629	11,880	13,319	79,348
Bradford-Allegany, Pa.-N.Y.	9,479	8,250	7,500	483,410
Salem, Illinois	8,316	17,432	43,848	160,609
Coalinga, California	8,045	6,326	4,401	395,198
Griffin,Keensburg, New Harmony, Ind.-Ill.	6,890	9,099	3,292	28,242
Long Beach, California	6,668	7,563	8,145	670,528
Gray County, Texas	6,644	5,962	6,361	191,263
Ventura Avenue, California	6,200	6,160	6,338	244,869
Eunice-Monument, N. M.	6,166	7,712	7,943	113,019
Conroe, Texas	5,928	5,847	4,516	133,653
Hutchinson County, Texas	5,799	4,575	4,362	161,165
Kettleman, California	5,756	7,016	8,715	260,678
K.M.A., Texas	5,421	4,863	5,164	39,552
Wasson, Texas	5,296	5,972	5,683	38,383
Huntington Beach, Calif.	5,290	5,074	4,869	306,364
Talco, Texas	4,842	4,074	4,280	53,356
Trapp-Sellers, Kansas	4,511	3,260	2,574	33,088
Cowden-Foster, Texas	4,452	5,050	4,283	42,969
Hendrick-Kermit, Texas	4,338	4,975	5,441	259,965
Hastings, Texas	4,170	3,725	2,897	39,621
Reed City, Michigan	4,069	85	....	6,931
Rodessa, La.-Ark.-Tex.	4,054	5,659	7,981	131,970
Lance Creek, Wyoming	4,035	4,485	4,337	44,840
Silica-Raymond, Kansas	3,994	3,289	2,602	47,218
Slaughter, Texas	3,968	1,228	591	10,765
Goldsmith-Harper, Texas	3,869	4,563	4,107	43,896
Santa Fe Springs, Calif.	3,801	4,313	4,739	480,998
Magnolia, Arkansas	3,623	3,586	3,664	21,602
Ville Platte, Louisiana	3,616	2,320	2,477	18,314
Dominguez, California	3,476	4,099	3,714	133,758
Mount Poso, California	3,463	1,676	1,773	57,936
Benton, Illinois	3,430	1,579	....	10,320
Johnsonville, Illinois	3,427	....	....	8,958
Yates-Tobarg, Texas	3,319	3,212	4,315	271,063
Inglewood, California	3,209	2,151	2,275	128,906
St. Louis, Oklahoma	3,003	3,363	5,204	157,981
Schuler, Arkansas	2,897	2,993	3,664	29,407
Dale-Hoodville, Illinois	2,849	2,309	56	9,799
Cut Bank, Montana	2,764	2,352	1,913	28,538
Kern River, California	2,761	1,925	2,107	328,495
Bemis-Walters, Kansas	2,676	2,115	1,615	20,647
Tom O'Connor, Texas	2,675	2,758	3,218	29,498
Cotton Valley, Louisiana	2,568	2,474	2,686	36,230
Santa Maria Valley, Calif.	2,517	3,387	2,635	24,743
Salt Creek, Wyoming	2,498	2,516	2,640	300,683
Smackover, Arkansas	2,462	2,719	2,831	770,013
West Ranch, Texas	2,445	1,525	622	8,194
Rural Hill, Illinois	2,432	....	....	4,047
Howard-Glasscock, Texas	2,401	2,410	2,638	101,556
Jennings, Louisiana	2,383	2,568	2,881	78,695
Olla, Louisiana	2,333	1,864	97	7,548
Coles Levee, California	2,329	2,821	862	11,087
McElroy, Texas	2,305	2,242	2,531	125,685
Carson County, Texas	2,300	1,764	1,386	41,602
Thompson, Texas	2,274	2,165	2,495	33,456
Anahuac, Texas	2,270	2,062	1,397	18,392
Ten Section, California	2,254	2,391	1,607	17,844
Clay City, Illinois	2,215	2,750	3,348	27,122
Ventura-Newhall, Calif.	2,158	2,015	1,316	70,752
Golden Meadow, Louisiana	2,146	2,228	1,936	11,737
Cement, Okla.	2,105	1,326	1,204	24,993
Cayuga, Texas	2,058	2,143	1,788	23,841
Rio Bravo, California	2,025	2,132	1,476	15,064
Hall-Gurney, Kansas	1,988	1,500	1,011	11,517
Earlsboro district, Okla.	1,988	1,736	1,918	180,475
Woodlawn, Illinois	1,936	14	....	4,470
Elk Hills, California	1,921	2,162	2,200	159,659
Hewitt and W., Oklahoma	1,920	1,769	700	94,751
Lafitte, Louisiana	1,912	2,287	2,322	29,078
Hull-Silk, Texas	1,907	1,954	1,047	8,818
Total 75 largest fields	273,854	360,894	377,553	11,468,051
Per cent of United States	55.1	54.6	55.1	45.3
Total 75 largest fields first half 1941		365,662	400,272	
Per cent of United States		55.3	58.5	
Total 75 largest fields first half 1940			413,647	
Per cent of United States			60.5	

Trend of Major Fields

Daily average production:	1942 No.	1942 6 mos. prod.	1942 Per cent	1941 No.	1941 6 mos. prod.	1941 Per cent	1940 No.	1940 6 mos. prod.	1940 Per cent
Over 80,000 bbl.	3	89,020	13.1	4	113,781	17.2	4	148,800	21.7
60,000 to 80,000	1	13,985	2.1	1	11,880	1.8	2	24,268	3.5
40,000 to 60,000	5	45,450	6.7	4	31,037	4.7	4	33,884	4.9
30,000 to 40,000	8	50,051	7.4	7	42,951	6.5	4	24,655	3.6
25,000 to 30,000	4	20,849	3.1	7	33,947	5.1	5	24,763	3.6
20,000 to 25,000	12	48,848	7.2	5	20,355	3.1	10	40,873	6.0
15,000 to 20,000	12	38,214	5.6	10	32,025	4.8	9	28,172	4.1
10,000 to 15,000	34	74,846	11.0	35	76,106	11.5	32	70,332	10.3
Total	79	381,263	56.2	73	362,082	54.7	70	395,747	57.8
Total United States	..	678,934	100.0	..	661,443	100.0	..	684,715	100.0

Production in United States, 1936-41, and for First Half Year 1941-42

	1936	1937	1938	1939	1940	1942	1st. 6 months 1941	1st. 6 months 1942	Difference*	No. of active wells 7-1-42	Daily ave. bbl. per well	Total cumul. production
Arkansas	10,697	12,181	18,357	21,383	26,072	26,301	12,938	13,190	252	2,981	24.45	516,885
California	214,756	238,592	249,930	225,493	223,104	230,317	111,723	114,455	2,732	17,927	35.26	5,944,727
Colorado	1,613	1,578	1,324	1,415	1,412	1,734	783	1,112	329	215	28.57	41,018
Illinois	4,439	7,426	22,800	92,203	146,484	128,550	59,229	57,116	*2,113*	22,936	13.76	884,362
Indiana	792	821	968	1,711	4,978	6,536	3,705	3,541	*164*	1,899	10.31	141,161
Kansas	57,084	69,158	58,135	60,973	64,832	81,899	36,975	43,976	7,001	21,588	11.25	1,219,335
Kentucky	5,638	5,497	5,834	5,621	5,188	4,811	2,559	2,394	*165*	12,330	1.07	183,520
Louisiana	80,807	90,427	94,955	94,182	103,410	117,634	55,611	59,021	3,410	7,310	44.68	1,236,610
Michigan	11,977	16,411	19,139	23,563	19,733	16,325	6,849	10,296	3,447	3,238	17.57	171,797
Mississippi	....	....	....	107	4,400	16,324	4,264	15,368	11,104	355	172.81	36,199
Montana	5,799	5,799	4,825	5,853	6,583	7,344	3,456	3,963	507	2,036	10.75	93,937
Nebraska	....	....	....	2	276	1,713	706	737	31	85	47.34	2,728
New Mexico	26,648	38,438	36,009	37,872	39,488	39,556	19,218	15,288	*3,930*	3,756	22.49	325,809
New York	4,626	5,465	5,045	5,098	4,999	5,126	2,253	2,368	115	15,380	0.85	136,966
Ohio	3,837	3,550	3,297	3,156	3,159	3,284	1,571	1,520	*51*	23,280	0.36	590,286
Oklahoma	200,881	223,107	169,307	152,400	149,629	153,167	74,383	71,213	*3,170*	53,469	7.36	5,001,252
Pennsylvania	17,041	19,174	17,449	17,832	17,353	16,492	8,464	8,903	439	80,000	0.61	1,022,463
Texas	424,396	502,967	470,760	482,335	489,183	501,348	240,602	236,296	*4,306*	99,292	13.14	6,814,954
West Virginia	3,814	3,829	3,725	3,580	3,444	3,378	1,687	1,707	20	17,000	0.55	418,620
Wyoming	14,269	19,637	18,956	21,207	26,232	30,009	14,435	16,441	2,006	3,620	25.09	541,154
Miscellaneous	48	60	60	94	71	62	32	29	*3*	120	1.32	1,197
Total	1,089,162	1,264,117	1,200,875	1,254,630	1,340,030	1,391,910	661,443	678,934	17,491	388,817	9.65	25,324,980
Daily avg.	2,976	3,463	3,290	3,428	3,671	3,813	3,654	3,751	116	....	....	....

*Loss in italics.

Drilling in the United States Falls Below Recent Levels

By W. V. HOWARD

COMPLETIONS in the first half of 1942 show a decline of 4,861 from the corresponding period in 1941. This year, however, water-input wells in the Pennsylvania-New York area have not been included in the list of completions, as such service wells are not carried in other areas. Adding these wells, so as to make a direct comparison with last year, the adjusted total of completions is 10,403 and the adjusted number of oil wells is 6,629. There is, therefore, a decline of 3,846 completions and 2,995 oil wells from the corresponding period of last year.

During the second half of 1941, there was an increase in drilling, bringing the year's total to 32,140 wells. A corresponding increase of 30 per cent in the second half of 1942 is not anticipated. In fact, there may be a further decline as the first half year's total includes a number of wells exempted from M-68 because they were started before December 23 and January was, therefore, almost a normal month. Operations have now steadied down to an average of about 325 weekly, indicating about 8,650 completions during the last half of the year.

The decline in drilling has affected nearly all areas excepting the eastern, or Pennsylvania Grade, fields, Indiana and New Mexico. The demand for Pennsylvania Grade crude and the development of the Clayton pool in Ohio has kept drilling up in the East. Indiana has had an active wildcat campaign, with, however, little success, and the Eddy County sector of New Mexico has received considerable development, mainly in Maljamar and the newly discovered Square Lake field.

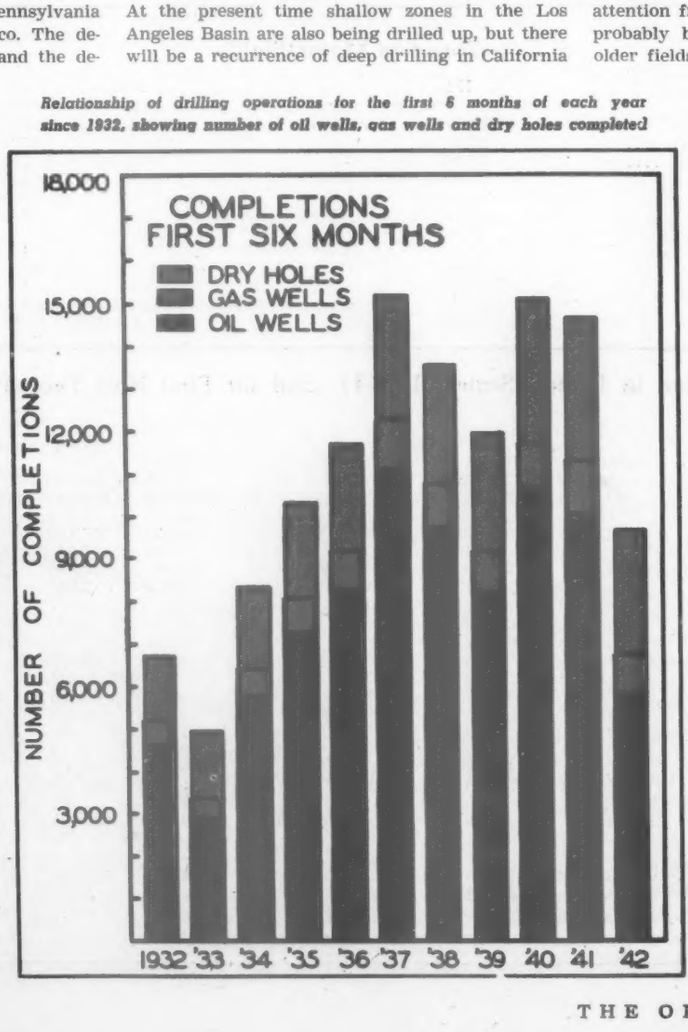
Gas development throughout the country has declined notably and there has been quite a reduction in wildcatting, as reflected by a 15 per cent drop in the number of dry holes drilled.

Much of the development drilling can be attributed to a few widely scattered new fields, but under 40-acre spacing this activity is considerably less than would have been caused by the same fields prior to M-68. It has become customary to blame M-68 for all of the drop in drilling, but this is not entirely justified. The number of discoveries and the size of those discoveries would not warrant a great increase in present activity. For several years there has been a trend to wider spacing, particularly in deep fields. In Kansas many fields were being developed on 20-acre spacing, even at the relatively shallow depths at which the pay is found on the uplift. Many operators favored 40-acre spacing for these limestone fields.

In many other sectors, such as West Texas, Arkansas, North Louisiana, the Gulf Coast and much of California, the great depth of drilling had already compelled 40-acre spacing so that, even without M-68, there is a tendency to drill fewer wells to develop the same amount of production. On the other hand, drilling time and drilling equipment is being used to nearly the same extent for this reduced number of wells as under previously existing conditions. There has been a tendency to deeper drilling and during the past half year this tendency has been accelerated with the result that there has been an increase in the average depth drilled of over 10 per cent.

This increase has affected nearly every part of the country, only the eastern district, Indiana, Kansas, the Forest City basin, the Panhandle, New Mexico and California failing to show noteworthy increases in drilling depths. Depths in most of these areas probably will never show much increase as drilling is now carried to the lowest probable pays. This is, of course, not true in California, where there is a tendency to develop the shallower heavy-oil areas in the coastal district and the flanks of the San Joaquin Valley. At the present time shallow zones in the Los Angeles Basin are also being drilled up, but there will be a recurrence of deep drilling in California as the need for light oil increases. In New Mexico, there is no point at present in going below the Permian lime pays. However, Ellenburger production in Texas is moving northward and westward and sooner or later there will be Ellenburger tests in New Mexico. If successful, the average drilling depth in that state will increase sharply.

Relationship of drilling operations for the first 6 months of each year since 1932, showing number of oil wells, gas wells and dry holes completed



Eastern States and Michigan

Little change from recent trends can be observed in the eastern states. The Oriskany gas areas are being drilled and the secondary-recovery projects in the Bradford area still account for the greater part of the district's activity. The gas play in eastern Kentucky is subsiding, particularly during the past few months. In Michigan, Reed City, Headquarters and Winterfield accounted for most of the wells. Gas fields in the northern sector are also being drilled up. This activity may subside somewhat during the next half year but the new flush fields have opened up a broad undeveloped zone which extends completely across the state and has encouraged much prospecting. Then, too, the Monroe is receiving more attention from Michigan operators and there will probably be considerable deepening of wells in older fields if the first tests show up favorably. The second half year in these states will probably be almost as active as the first 6 months.

Illinois and Indiana

Drilling in Illinois has fallen off more than 40 per cent from the first 6 months of 1941. The discoveries in Illinois so far this year have been small and will result in little more activity during the next few months. However, more than almost any other area, Illinois needs to find and develop oil. Its proximity to the eastern markets requires a continuation of development, even of overdevelopment and overproduction. Illinois operators hope, and apparently with reason, for additional freedom from the spacing restrictions imposed by the Government. If these restrictions are lightened, additional drilling will follow. If not, then discoveries will have to be better than those of the first half year to warrant much optimism regarding future activity.

Indiana, with a record of more dry holes than producers, can hardly expect much additional drilling unless better discoveries are made than have shown up recently. There is no reason why deep-seated oil reservoirs should become impoverished a few miles east of the Wabash, but developments of the past few years indicate that they do. There is also no reason why the old Trenton field of Ohio should have petered out on crossing the Indiana State line, so far as oil was concerned. It did, how-

ever, so far as drilling showed. At the present time there is some interest in deeper formations on the north flank of the Kankakee arch and towards the Michigan basin. There are also good possibilities on the west flank of the Cincinnati arch and in the southern part of the state.

Arkansas-North Louisiana-Mississippi

Three areas were responsible for the bulk of the activity in this area, the Midway field of Arkansas, the Pettit zone at Haynesville, and the eastern part of the Wilcox trend in the area surrounding La Salle Parish. There are still some undrilled locations at Midway, there is little indication of a slowing up of the Haynesville play and the Wilcox zone is showing up with discoveries which will keep it active for some time. In reserve is the Tuscaloosa, or Woodbine equivalent, which was proved productive in the Ferriday section of Concordia Parish. The Midway field has opened up a large area for development and the Haynesville Pettit zone will also encourage deeper drilling of the old fields producing from the Upper Cretaceous. Demand for oil from this sector, combined with the known possibilities for good production, will probably cause drilling to increase.

In Mississippi, Tinsley is now drilled up and there is nothing in sight to encourage optimism regarding future activity. Mississippi, together with the whole of the southeastern states, needs a good discovery if it is to remain in the drilling picture.

Kansas and Nebraska

The results of recent drilling in Nebraska and adjacent parts of the Forest City basin have not been encouraging. If Nebraska is to remain active, it appears to be necessary to open up a new area on the west flank of the Nemaha mountains or on the flank of the Cambridge arch in the western part of the state.

In Kansas, there have been few noteworthy developments. Kansas operators are still engaged in the profitable practice of making large fields out of little ones by stepping out into the intervening areas and linking known pools. The Peace Creek area on the south flank of the Barton arch is still active and will remain so. Results in Barber County, still farther down the flanks, are encouraging and it may be expected that drilling would continue about along present lines if it were not for the decline in production in competing states. As Illinois' and Oklahoma's production drops, Kansas receives larger quotas and allowables rise correspondingly. If this condition continues, and there is nothing now in sight to reverse the trend, more drilling may be expected by operators who cannot make money on 20 bbl. a day but can on 35.

Oklahoma

A 33⅓ per cent decline in completions tells Oklahoma's present story about as fully as is necessary. Except in the southern part of the state, discoveries of recent years have all been small and have been rapidly drilled up. There are much better possibilities in the southern part of the state than in the north and Cumberland, Apache, and Paul's Valley should point the way to considerably more development. However, in this area, there is a tendency to large blocks which, in turn, do not cause rapid development, even of important discoveries. Unless an unforeseen discovery is made, drilling in Oklahoma will probably continue to slow up.

East and North Central Texas

East Texas continues to get its periodic shots in the arm and the past half year was no exception. After Hawkins was drilled up and the prospecting that coincided with this development showed little in the way of results, it was felt that the area would probably subside for a while. However, a new small Woodbine fault-line field and a Paluxy sand discovery in the basin south of the fault have revived interest in the district and activity may be expected to continue at about the same rate as during the past 6 months.

In North Central Texas, active prospecting continues and finds are reported almost weekly. These are mainly small and cause little drilling. There is, however, much semiproven Ellenburger drilling to be done and the general interest in the region leads to the belief that it may become a little more active than it is at present.

Gulf Coast and Southwest Texas

This region is handicapped by lack of markets but prospecting has continued and there is much drilling to be done before known fields are fully outlined. Nothing unsuspected before the beginning of the year has been uncovered; in fact the possibilities which have since materialized were fully known at that time. It was known that Jackson County had a number of good fields and might have several more, that both the updip and downdip Wilcox trend had excellent possibilities and that many large gas-distillate fields were surrounded by a halo of oil of unknown thickness. During the past 6 months many of these potentialities have become realities and more opportunities for drilling have been opened up as a result.

Deep flank drilling on salt domes has also opened up new production with the result that better marketing conditions should spur activity in this sector. With the aproaching shortage of needed oil, it may be expected that improved transportation facilities will be provided.

West Texas and New Mexico

The southwest Andrews County sector has been proved over a wide area and unless present indications fail to materialize, it will become another Slaughter or Wasson. Drilling at Slaughter has not been completed by any means, the Abell, Sand Hills and

(Continued on Page 200)

Summary of Completed Work in All Fields of the United States in First 6 Months of 1942 and in the Same Period of 1941

	First 6 mos.	Comp.	Oil wells	Gas wells	Dry holes	Footage	Avg.
Eastern	1942	1,824	1,308	405	111	2,637,826	1,446
	1941	2,727	2,183	421	123	3,902,156	1,431
Ohio	1942	469	101	209	159	1,121,380	2,391
	1941	757	193	334	230	1,488,401	1,966
Michigan	1942	333	170	28	135	856,014	2,570
	1941	399	149	29	221	800,491	2,006
Kentucky	1942	162	25	101	36	314,968	1,944
	1941	281	103	90	88	459,414	1,635
Indiana	1942	207	80	10	117	359,479	1,736
	1941	218	116	18	84	429,344	1,969
Illinois	1942	833	480	8	345	2,186,671	2,625
	1941	1,517	1,117	5	395	3,654,615	2,409
Kansas	1942	724	410	31	283	2,143,831	2,961
	1941	978	692	25	261	2,888,129	2,945
Nebraska	1942	17	8	0	9	40,664	2,392
	1941	47	17	0	30	112,424	2,392
Missouri, Iowa	1942	9	0	0	9	7,796	866
	1941	12	0	2	10	17,842	1,487
Oklahoma	1942	628	295	47	286	2,017,921	3,213
	1941	939	537	89	313	2,193,403	2,336
Arkansas	1942	78	46	6	26	448,640	5,751
	1941	95	50	4	41	352,879	3,714
Mississippi	1942	37	17	0	20	188,210	5,086
	1941	119	89	1	29	360,271	3,027
Alabama	1942	2	0	0	2	4,419	2,210
	1941	3	0	0	3	3,299	1,100
North Louisiana	1942	239	148	0	91	973,657	4,074
	1941	306	176	38	92	895,024	2,925
Gulf Coast La.	1942	270	182	2	86	2,334,865	8,648
	1941	452	310	10	132	3,487,457	7,715
North Cent Texas	1942	656	329	16	311	1,726,976	2,633
	1941	1,319	786	27	556	2,976,880	2,257
West Texas	1942	815	702	9	104	3,572,530	4,383
	1941	977	917	5	55	4,069,534	4,165
Eastern Texas	1942	199	127	9	63	936,741	4,707
	1941	585	447	31	97	2,306,393	3,943
Texas Panhandle	1942	200	170	26	4	610,655	3,053
	1941	257	239	12	6	778,315	3,028
Gulf Coast Texas	1942	404	293	17	94	2,639,690	6,534
	1941	537	417	21	99	3,587,978	6,682
Southwest Texas	1942	631	322	29	280	2,896,329	4,591
	1941	862	518	43	201	3,347,934	3,884
Montana	1942	84	54	16	14	199,439	2,374
	1941	116	67	31	18	248,147	2,157
Wyoming	1942	47	35	2	10	177,388	3,774
	1941	68	55	1	12	218,978	3,220
Colorado	1942	5	3	0	2	26,171	5,234
	1941	19	12	1	6	44,915	2,364
New Mexico	1942	139	101	8	30	411,677	2,962
	1941	133	103	7	23	405,656	3,050
California	1942	380	222	18	140	1,836,523	4,833
	1941	530	431	6	93	3,082,168	5,815
First 6 months	1942	9,392	5,628	997	2,769	30,670,460	3,266
First 6 months	1941	14,253	9,724	1,251	3,278	42,112,047	2,955
Difference	....	4,861	4,098	254	509	11,442,587	311
First 6 months	1940	15,037	11,000	920	3,117	.....	.....
First 6 months	1939	12,467	8,609	866	2,992	.....	.....
First 6 months	1938	13,536	9,721	958	2,855	.....	.....
First 6 months	1937	15,122	11,132	1,100	2,890	.....	.....
First 6 months	1936	11,706	8,358	813	2,535	.....	.....

Record Demand for Natural Gas Assured Industry This Year

By J. P. O'DONNELL

Demand for natural gas, this analysis shows, may reach an unprecedented peak of 1.8 trillion cubic feet this year and is practically certain to exceed 1.7 trillion which in itself will be a new high record. This discussion of conditions in the natural-gas industry outlines the factors of consumption that are pushing the work of producers and transmission companies to the maximum limits in certain parts of the country.

NEW YORK.—If the natural-gas industry's record through the first third of the year is duplicated in the final two-thirds, total consumption for 1942 will exceed 1.7 trillion cubic feet for the first time and will verge closely on 1.8 trillion cubic feet, the next goal on the industry's record of progress. Even if demand for natural gas should slip during the remainder of the year, it is certain that a new all-time consuming record will be established.

Statistics covering the first half of 1942 are not yet available. Those for the first 4 months of the year, compiled by the statistical department of the American Gas Association, show that total sales for that period were 12.1 per cent above the corresponding period of 1941. Since the previous sales record was established in 1941, it is obvious that another is now in the making.

Total natural-gas sales in 1941 were 1,602,634,500,000 cu. ft. If the 12.1 per cent increase shown in the first third of 1942 is continued through the year it would put total sales for 1942 at 1,796,553,274,000 cu. ft. It is questionable whether or not the record for the first 4 months will be maintained since an appreciable proportion of it was accounted for by domestic sales which are, of course, variable and not susceptible to accurate prediction.

Volume and Revenue Up

Natural-gas sales for the first 4 months of 1942 and 1941 are compared in accompanying Table 1. This table also compares the industry's revenue for the same periods and gives a comparison of the number and types of customers as of April 30, 1942, with those of April 30, 1941. This table shows that, from a volume standpoint, sales increases were largest in the domestic and industrial fields, but that the largest percentage gain was in the commercial field. The largest percentage gain in the number of consumers was in the domestic field though appreciable gains were noted in each of the others.

The magnitude of the increase in natural-gas sales in the first 4 months of 1942 is indicated in Table 2 which compares the sales for that period with the corresponding period of each previous year since 1929. The increase for the first third of 1942 was 73,073,700,000 cu. ft. and, with the exception of 1936 when an increase of more than 74,000,000,000 cu. ft. was experienced, was the largest in this 13-year period. With the exception of 1938, consumption has increased steadily since a series of declines ended in 1933. These statistics are given graphically in Fig. 1.

From the revenue standpoint this also looms as the industry's best year. Revenue for the first 4 months of 1942 aggregated $245,826,100 and compared with $218,474,200 for the same 1941 period, an increase of 12.5 per cent. If the 12.5 per cent increase is continued through the year, total revenue in 1942 would reach $593,072,325 compared with $527,175,400 for the preceding year. The major share of the increased revenue came from domestic consumers who accounted for almost 60 per cent of the total but industrial customers showed a higher percentage increase.

Further study of the revenues indicates that rates varied only slightly from 1941 despite the much higher costs resulting from increased taxes, wages, etc., which the industry has incurred during the past year. These figures indicate that industrial consumers paid approximately 18.5 cents per 1,000 cu. ft. in the first part of 1942 against 18 cents in the first part of 1941, an increase of less than 3 per cent. On the other hand, they indicate that domestic consumers paid approximately 61.3 cents per 1,000 cu. ft. in 1942 against 63 cents in the 1941 period, a decline of slightly less than 3 per cent.

As remarkable as the expansion in demand for natural gas appears to be this year, it would be even greater if the expansion of service which several units in the industry have proposed were allowed by federal authorities. While this is true of many sections of the country it is especially true of the Appalachian area where an annual industrial demand of some 150,000,000,000 cu. ft. would undoubtedly expand if sufficient supplies were available. Only in the Southwest and in California where more than ample supplies are available and where adequate distribution systems already exist are the maximum potential demands being approximately met.

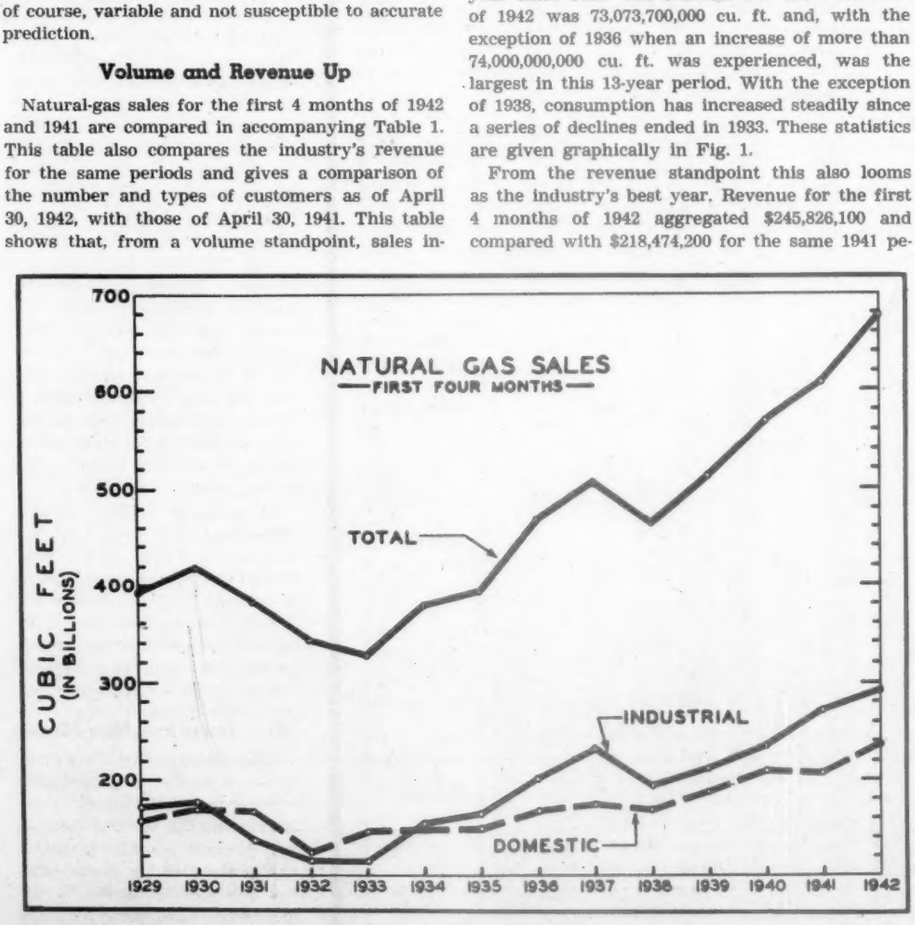


Fig. 1—Industrial and domestic consumption are main factors in pointing total-demand curve to new high

TABLE 1—CUSTOMERS, SALES, REVENUE

	1942	1941	Per cent change
Customers:			
Domestic*	7,656,200	7,235,000	+5.8
Commercial	567,800	550,000	+3.2
Industrial†	44,900	43,100	+4.2
Miscellaneous	2,900	2,500	.....
Total	8,271,800	7,830,600	+5.6
Gas sales (1,000's cu. ft.):			
Domestic*	238,070,700	209,413,400	+13.7
Commercial	72,048,900	62,225,100	+15.8
Industrial†	356,873,900	325,235,200	+9.7
Miscellaneous	10,413,300	7,419,400	.....
Total	677,366,800	604,293,100	+12.1
Revenue (dollars):			
Domestic*	147,829,200	131,901,400	+12.1
Commercial	30,054,200	26,988,200	+11.4
Industrial†	66,289,800	58,542,300	+13.4
Miscellaneous	1,652,900	1,132,300	.....
Total	245,826,100	218,474,200	+12.5

*Includes house heating. †Includes electric generation.

TABLE 2—FIRST 4 MONTHS' CONSUMPTION

(Figures in thousands of barrels)

Year—	Consumption 1,000's cu. ft.	Change 1,000's cu. ft.
1942	677,366,800	+73,073,700
1941	604,293,100	+35,043,400
1940	569,249,700	+56,672,000
1939	512,577,700	+47,666,600
1938	464,911,100	—41,568,800
1937	506,479,900	+38,433,200
1936	468,046,700	+74,374,300
1935	393,672,400	+16,777,300
1934	376,895,100	+47,524,500
1933	329,370,600	—13,620,600
1932	343,991,200	—39,236,000
1931	383,227,800	—36,011,300
1930	419,239,100	+31,962,500
1929	387,276,600	.....

Federal Relationship With Oil Industry Solidified by War

By HENRY D. RALPH

This review of measures considered necessary by the Government to adjust oil operations to requirements of war shows that no branch of the industry was left untouched. In retrospect, practically all the regulations are shown to be woven around the central theme of conserving critical metals.

In prospect is a continued curb on expenditure of critical materials.

WASHINGTON, D. C.—Revolutionary changes in the relationship between the oil industry and the federal Government developed during the first half of 1942. Wartime exigencies forced strict control of every phase of the industry, and, like others the petroleum industry virtually turned over its facilities to the command of the Government.

Most of this control was exercised by new regulatory agencies set up for the duration under executive powers of the president, and relatively little legislation affecting the industry was enacted. Many of these were already functioning, to a greater or lesser extent, before the war began at Pearl Harbor on December 7, 1941.

Regulatory Agencies

Chief regulatory agency affecting the oil industry is the Office of Petroleum Coordinator, established May 28, 1941, with Secretary of the Interior Harold L. Ickes at its head.

One of OPC's biggest jobs, from the standpoint of administrative detail, early became the processing of applications from the entire oil industry for priorities for materials, and in January, this work was consolidated into a new Materials Division. Then the War Production Board was created to supersede the old Office of Production Management and Supply Priorities and Allocations Board, and OPC was designated as the oil industry branch of this over-all agency.

Administrative work of OPC steadily expanded, and in February, Robert E. Allen was promoted from director of production to assistant deputy coordinator, later to be joined by other assistant deputies.

As transportation difficulties increased the problems of keeping vital areas supplied with minimum amounts of proper petroleum products, OPC in March created a Supply Division, charged with these duties. A Natural Gas and Natural Gasoline Division was carved out of the Production Division early in May, and later that month a Facility Security Division was created to direct the work of protecting oil plants and properties against sabotage.

The Petroleum Industry War Council, formed late in 1941, became virtually an operating agency for the petroleum coordinator, undertaking many assignments to initiate new programs. Meeting once a month in Washington for 2 to 4-day sessions, its standing and special committees worked constantly during the interims.

To coordinate state and federal regulation of production, the coordinator formed a Council of Petroleum Regulatory Authorities which held its first meeting in April and worked out plans for adjusting production, state by state, in accordance with national requirements.

Of greatest moment was price control, handled by the Office of Price Administration which at first was a creature of the executive office and later was given formal status and power by Congress.

Prices of crude and petroleum products had been under informal voluntary ceilings and on January 20, OPA issued a policy statement clarifying previous voluntary ceilings. These prices were formalized February 2 with the issuance of OPA Price Schedule 88, which made a few local changes in certain prices, particularly a small increase in East Coast gasoline prices. A further increase in East Coast prices was authorized by an amendment of March 20, and minor changes were made in Schedule 88 from time to time.

On April 28 OPA issued general maximum-price regulation, fixing highest March prices as the ceilings for virtually all commodities and services. Schedule 88 remained in effect, with some changes, and a new Maximum Price Regulation 137 was issued to cover retail sales. The oil-price changes made at that time included a third increase in East Coast products, dictated by the heavier losses to oil companies substituting rail for tanker shipments. On June 29, OPA authorized East Coast price increases of 2.5 cents per gallon on gasoline and 2 cents on light fuels.

OPC also worked closely with OPA and WPB on curtailment and rationing problems; with the Office of Defense Transportation on matters of land and barge movement of oil; with the new War Shipping Administration and the reorganized interdepartmental Tanker Control Board on ocean shipping; and with the Board of Economic Warfare on foreign relations and exports.

Production

Conservation Order M-68, issued by the War Production Board December 23, 1941, regulated drilling through the first 6 months. This prohibited acquisition or use of materials for drilling wells not conforming to uniform spacing patterns of one well per 40 acres, except on specific approval. Clarifying amendments were issued January 13 and February 18.

Materials for drilling, and all other activities in the industry, including maintenance and repair, were placed under control by Preference Rating Order P-98 issued by the WPB January 13. Intended to be temporary and subject to change, P-98 was first due to expire February 28 but was extended without change to March 15 on which date it was slightly revised and extended to May 15, and then to July 1.

OPC started certifying production requirements to states early in the year, substituting this guide to demand for Bureau of Mines monthly forecasts. The April certification contained an innovation by including all liquid hydrocarbons, such as condensate and natural gasoline as integral parts of total demand.

OPC's May production rates were protested by the Kansas and Texas commissions. The Texas allowables were not reduced to the level of OPC certifications that month, in spite of a stern warning from Coordinator Ickes.

The depletion allowance in the income tax law was attacked by the Treasury Department during hearings on the new revenue bill before the House committee on ways and means in March and April. But the allowance was stoutly defended by the oil industry and the tentative draft of the bill completed by the committee at the end of June made no change.

Refining

Government regulations affecting oil refining chiefly concerned adapting plants to the production of war materials—100-octane aviation gasoline and explosives and components of synthetic rubber. Refiners were urged to adjust runs to yield more fuel oil and less gasoline.

The 100-octane program was under way on a modest scale when the war broke out, but in the ensuing months the goal was increased constantly. OPC arranged for the pooling of information and patents, aided in plant design, writing contracts, obtaining financial assistance, and getting priorities on materials.

Early in January it was evident that the United States was cut off from virtually all sources of crude natural rubber, and a synthetic program was rushed which from time to time was expanded until the capacity desired was stated to be in the neighborhood of 800,000 tons annually. The bulk of this is to be rubber of the buna type, with the oil industry supplying the chief ingredients, butadiene and styrene. As in the case of 100-octane gasoline, OPC had the task of coordinating the program.

Curtailed automobile use and gasoline rationing and transportation shortages forced reductions in gasoline production, while growing industrial activity increased the demand for fuel oil, necessitating a change in refinery operations. Plans were announced March 31 whereby refiners in OPC Districts 1, 2 and 3 rearranged their runs, and early in June a more detailed plan of allocating refinery runs was approved by OPC.

This revision of runs naturally disrupted refining economy, but with fuel oil under ceilings its price could not be raised to compensate for the increased costs.

Transportation

Oil transportation by whatever means came under varying degrees of government regulation during the first half of 1942.

The Maritime Commission pegged tanker rates to levels prevailing in January. More tankers were diverted to military uses or sunk by enemy action so that marine shipments became a negligible factor in supplying the East Coast. To offset this, OPC promoted plans for increased rail shipments, a tank-car pool was formed to share costs, and industry committees were authorized to allocate shipping facilities, to exchange supplies in order to prevent shortages, and to

(Continued on Page 152)

Extensive New Pipe-Line Work Belies Tight-Material Curb

By PAUL REED

A SURPRISING amount of pipe-line construction has been carried on during the first half of this year when steel shortage drastically curtailed plans for expansion. Work done already, together with projects recently approved for early construction by government authorities, indicate that 1942 will be another big pipe-line year.

In the first 6 months of 1942, approximately 2,400 miles of pipe has been laid or contracted for projects which may be regarded as belonging to the year's business. This does not include projects representing 2,600 miles completed early in the winter which are essentially 1941 projects. If 700 miles of line completed and under construction this year by American firms in Canada and South America is included, the progress made by the American pipe-line industry in laying pipe in 1942 represents a total of more than 3,100 miles. Midway in the year, official announcements indicate the federal Government is authorizing additional lines of approximately 2,200 miles to be laid during the second half of 1942. Furthermore, it appears that approximately 1,300 miles more may be required later in the year to render programs fully effective which have been planned for present needs. With these proposals added to other 1942 projects, the total amount to be laid by the pipe-line industry of the United States this year may be approximately 6,700 miles. Completion of such a program would compare favorably with what has been done in other big pipe-line years of the past decade.

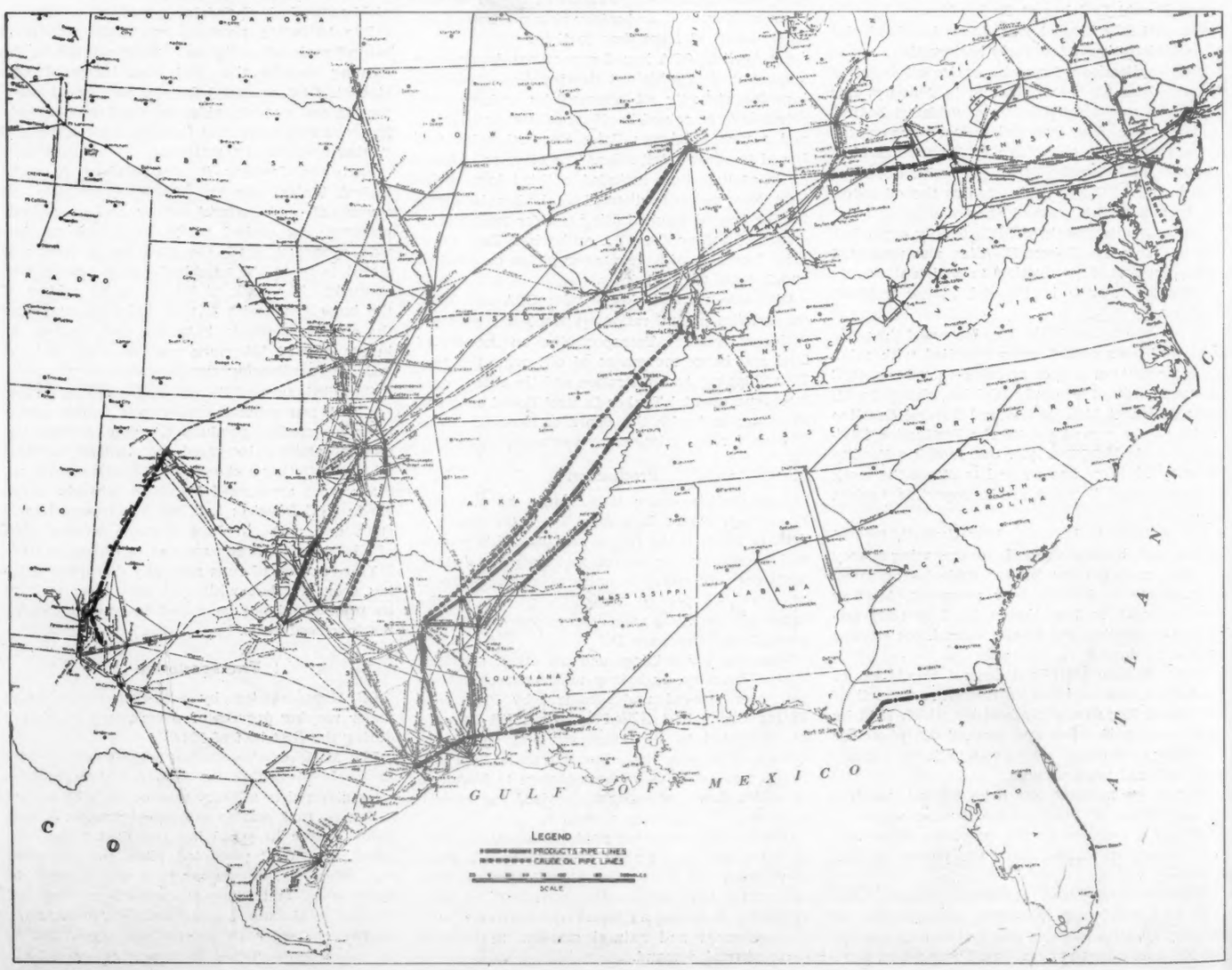
So far in the world conflict, shipment of supplies has been of such vital importance in military and naval strategy that the present phase of the struggle has been referred to as a War of Transportation. In this the pipe lines of the United States and foreign countries assume special significance.

Extensive submarine sinking of tankers has thrown loads on overland means of transportation. These loads can be carried more economically on a large scale the year around by pipe lines because of their efficiency.

In studying conditions for transporting oil from Texas to the New York area, it has been estimated that steel required for a large-diameter line is about four times that needed for tankers with

(Continued on Page 86)

New pipe-line projects approved or in advanced stages of planning, shown on this map in heavy lines, will enhance the industry's ability to supply the East Coast and diminish the blockade that has hampered movement from producing and refining centers



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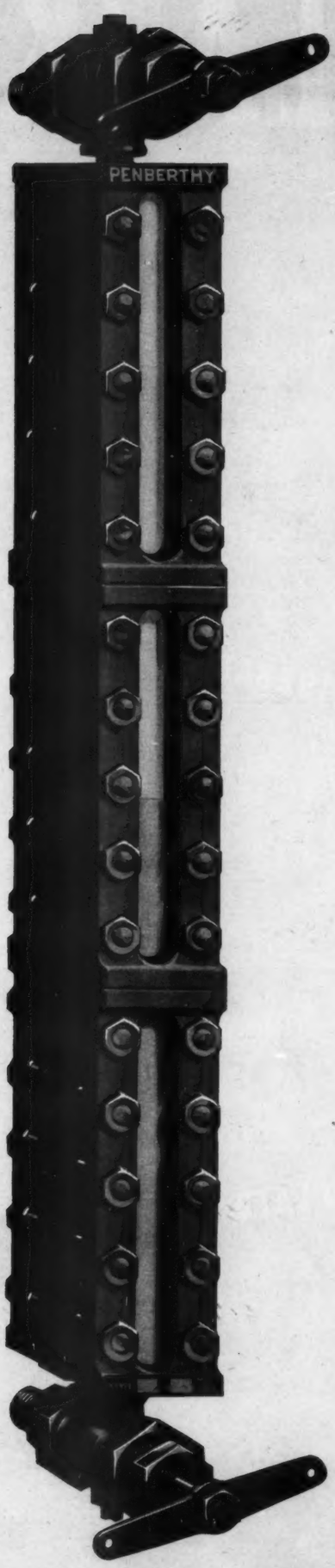
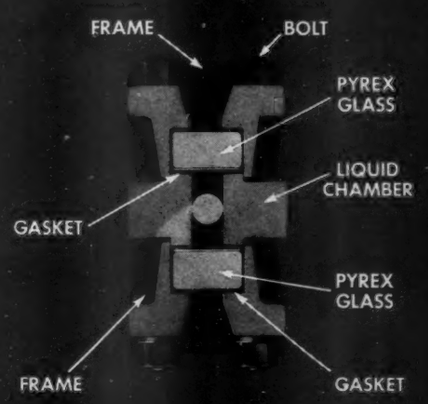
TRANSPARENT

LIQUID LEVEL GAGES



To observe the color or density of liquids under high pressures and/or temperatures



Made of alloy temperature resisting steel. Liquid chamber for single or multiple section gage is made of a solid block of steel the full width of frame to assure perfect alignment and rigidity. Frame has an extra heavy beam at each end and glass chamber is accurately machined to the contour of the glass providing full metal backing for the gaskets. Pyrex glass has greater resistance to thermal shock and erosion.

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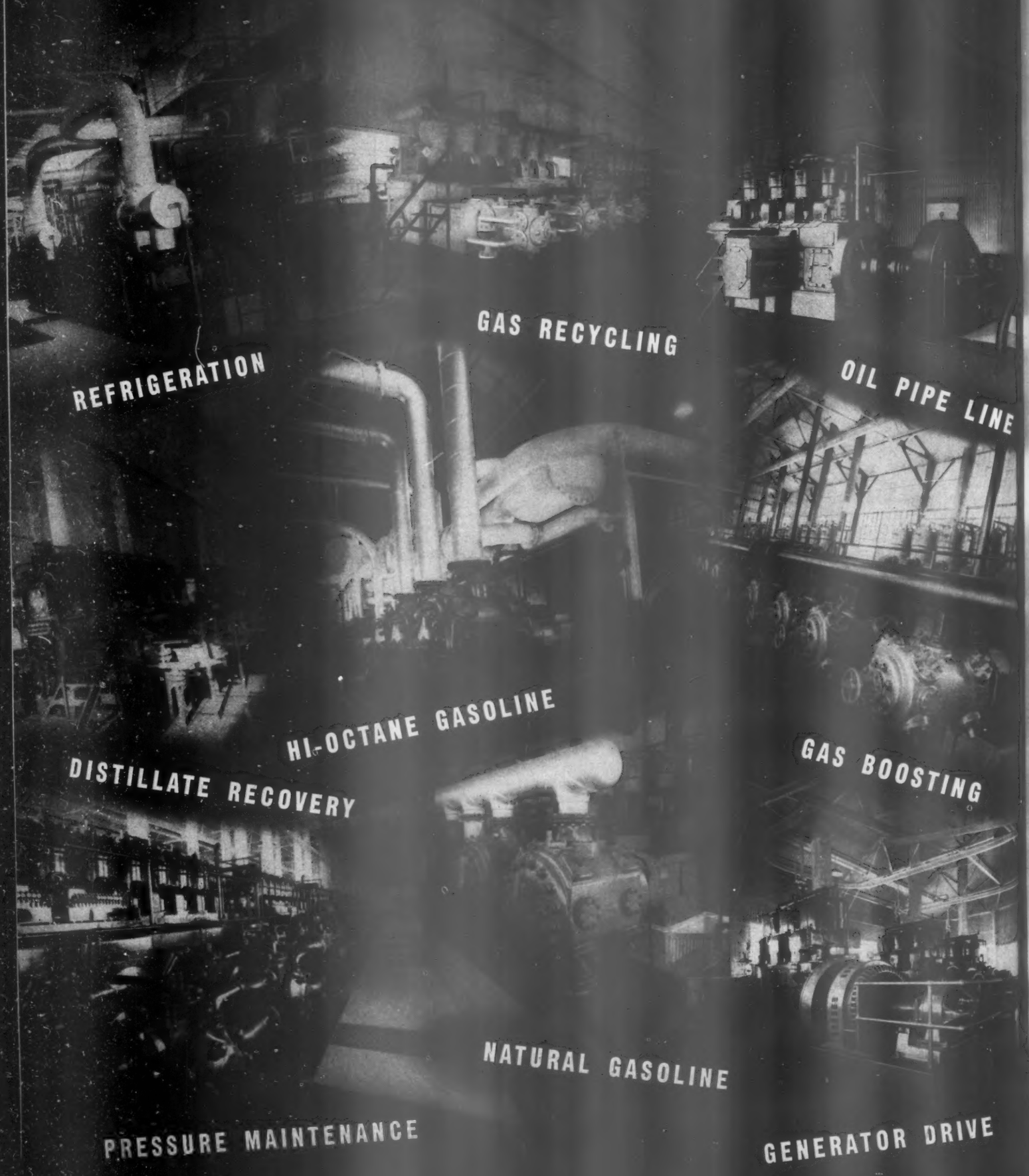

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TODAY, when speed is the watchword throughout industry, CLARK Gas, Diesel and Steam Driven "Angle" Compressors offer the great advantage of maximum speed of installation. Their compact design permits them to be shipped almost completely assembled, — has reduced more than 50% the size of foundations required, as compared with the older horizontal compressors, — and has greatly reduced area of floor space and size of buildings required. See photos at right.

Economy of money as well as time is also highly important today. It is to be noted that the factors mentioned which save time also involve large money savings.

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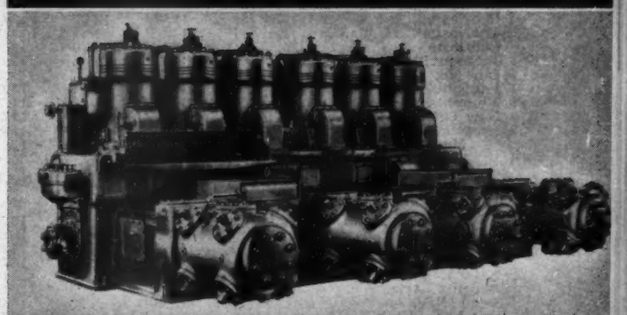
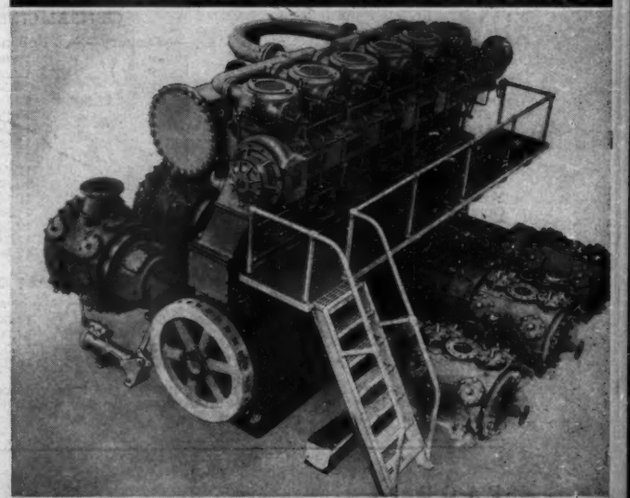
CLARK

Shipping a CLARK 6-Cylinder Gas-Driven "Angle" fully assembled except for attaching the 4 Compressor Cylinders

This building, only 24 feet wide, houses 7 600 H. P. CLARK "Angle" Compressors, totaling 4,200 H. P.



CLARK 6-Cyl. "Angle" Compressor, gas or Diesel driven. Sizes from 2 to 8 cylinders: Gas-Driven 200 to 1000 H. P.; Diesel Driven, 175 to 700 H. P.



CLARK Model 4 SCRA-14 Steam Engine Driven "Angle" Compressor. Built in 2 to 8-Cyl. Sizes, ranging from 500 to 4,000 H. P.

Service-Station Price Outlook Circumscribed By OPA Ceiling

By H. STANLEY NORMAN

UNCERTAINTIES of federal price control, rationing, and rubber conservation confuse the outlook for retail motor-fuel prices which, in most sections of the country, rubbed against ceilings established by the Office of Price Administration throughout the first 6 months.

The average retail price of gasoline at the start of July in 50 selected cities of 15.39 cents per gallon, exclusive of taxes, was the highest since 1930. But actual market conditions belied the semblance of improvement. All of the net average increase of 0.6 cent per gallon was confined to the New England, Atlantic, and southeastern cities within what has become generally known as the rationed area.

Increases totaling 3.7 cents per gallon, 2.5 cents of which became effective at the end of June, were permitted by OPA during the first 6 months in 17 states and the District of Columbia. Prior to June 29, OPA had authorized suppliers in the rationed area to advance tank-car, tank-wagon, and retail motor-fuel prices a total of 1.2 cents per gallon as a partial offset to the unprecedented increases in the cost of transportation.

Average motor-fuel prices throughout the country, exclusive of taxes, stands this month at 15.39 cents per gallon, the highest figure attained since October 1930. The June 1, 1942, average service-station price, ex taxes, was 14.40 cents and on July 1, 1941, the average quotation was 13.81 cents per gallon.

This review shows how advances permitted to offset transportation costs in 17 eastern states and the District of Columbia, rationed since May 12, have been solely responsible for what otherwise might appear to be a vigorous market condition.

TREND OF AVERAGE MOTOR-FUEL PRICES DURING FIRST HALF YEAR

ATLANTIC AND NEW ENGLAND CITIES

	January		February	March	April	May	June	
Baltimore, Md.	12.70[1]	13.00[28]	13.00	13.50[27]	13.90[30]	13.90	....	16.40[29]
Boston, Mass.	12.20[1]	12.50[28]	12.50	13.00[27]	13.40[30]	13.40	....	15.90[29]
Burlington, Vt.	13.20[1]	13.50[28]	13.50	14.00[27]	14.40[30]	14.40	....	16.90[29]
Buffalo, N. Y.	12.50[1]	12.80[28]	12.80	13.30[27]	13.70[30]	13.70	....	15.20[29]
Dover, Del.	12.50[1]	12.80[28]	12.80	13.30[27]	13.70[30]	13.70	....	16.20[29]
Hartford, Conn.	12.90[1]	13.20[28]	13.20	13.70[27]	14.10[30]	14.10	....	16.60[29]
Manchester, N. H.	13.60[1]	13.90[28]	13.90	14.40[27]	14.80[30]	14.80	....	17.30[29]
Newark, N. J.	13.00[1]	13.30[28]	13.30	13.80[26]	14.20[30]	14.20	....	16.70[29]
New York, N. Y.	12.40[1]	12.70[28]	12.70	13.20[27]	13.60[30]	13.60	....	16.10[29]
Philadelphia, Pa.	12.00[1]	12.30[28]	12.30	12.80[27]	13.20[30]	13.20	....	15.70[29]
Pittsburgh, Pa.	12.50[1]	12.80[28]	12.80	13.30[27]	13.70[30]	13.70	....	16.20[29]
Portland, Me.	12.60[1]	12.90[28]	12.90	13.40[27]	13.80[30]	13.80	....	16.30[29]
Providence, R. I.	12.30[1]	12.60[28]	12.60	13.10[27]	13.50[30]	13.50	....	16.00[29]
Washington, D. C.	13.00[1]	13.30[28]	13.30	13.80[27]	14.20[30]	14.20	....	16.70[29]
Monthly average	12.67	....	12.91	12.99	13.42	13.78	....	13.97

SOUTHEASTERN CITIES

	January		February	March	April	May	June	
Atlanta, Ga.	13.50[1]	....	14.50[4]	14.50	14.50	14.50	14.90[19]	17.40[29]
Birmingham, Ala.	14.00[1]	....	14.00	13.50[30]	13.50	13.50	....	13.50
Charleston, S. C.	12.75[1]	13.05[28]	13.05	13.55[30]	13.95[30]	13.95	....	16.45[29]
Charleston, W. Va.	14.05[1]	14.35[28]	14.35	14.85[27]	15.25[30]	15.25	....	17.75[29]
Charlotte, N. C.	13.90[1]	14.20[28]	14.20	14.70[27]	15.10[30]	15.10	....	17.60[29]
Jacksonville, Fla.	13.00[1]	....	12.00[20]	12.00	12.00	13.00[8]	13.40[19]	15.90[29]
Jackson, Miss.	13.50[1]	....	13.50	13.50	13.50	13.50	....	13.00[29]
Louisville, Ky.	14.00[1]	....	14.00	13.50[30]	13.50	13.50	....	13.50
Memphis, Tenn.	11.75[1]	....	11.75	11.75	11.75	11.75	....	10.90[22]
New Orleans, La.	11.75[1]	....	11.75	11.75	11.75	11.75	....	11.75
Norfolk, Va.	12.25[1]	12.55[28]	12.55	13.05[27]	13.45[30]	13.45	....	15.95[29]
Monthly average	13.15	....	13.29	13.26	13.34	13.54	....	13.67

MIDWESTERN CITIES

	January		February	March	April	May	June	
Albuquerque, N. M.	13.50[1]	....	13.50	13.50	13.50	13.00[1]	....	13.00
Boise, Idaho	16.60[1]	....	16.60	16.60	16.60	16.60	....	16.60
Casper, Wyo.	14.50[1]	....	14.50	14.50	14.50	14.50	....	14.50
Denver, Colo.	13.00[1]	....	13.00	13.00	13.00	13.00	....	13.00
Helena, Mont.	15.00[1]	....	15.00	13.50[9]	13.50	15.00[1]	....	15.00
Phoenix, Ariz.	16.00[1]	....	16.00	16.00	16.00	16.00	....	16.00
Reno, Nev.	16.00[1]	....	16.00	16.00	16.00	16.00	....	16.00
Salt Lake, Utah	16.50[1]	....	*13.50[17]	13.50	14.50[25]	13.50[22]	....	13.50
Monthly average	15.13	....	14.79	14.62	14.53	14.78	....	14.70

*Cut 2.5 cents February 1, another 0.5 cent February 17.

CENTRAL CITIES

	January		February	March	April	May	June	
Chicago, Ill.	12.60[1]	....	12.60	12.60	11.90[27]	11.90	....	11.90
Cleveland, Ohio	12.50[1]	....	12.50	12.50	12.50	12.50	....	12.50
Dallas, Tex.	10.50[1]	....	10.50	10.50	10.50	10.50	....	10.50
Des Moines, Iowa	10.40[1]	12.90[9]	12.90	12.90	12.90	12.90	....	12.90
Detroit, Mich.	12.90[1]	....	12.90	12.90	12.90	12.90	....	12.90
Fargo, N. D.	14.40[1]	....	14.40	14.40	14.40	14.40	....	14.40
Huron, S. D.	13.80[1]	....	13.80	13.80	13.80	13.80	....	13.80
Indianapolis, Ind.	12.70[1]	....	12.70	12.70	12.70	12.70	....	12.70
Little Rock, Ark.	12.50[1]	....	12.50	12.25[14]	12.25	12.50[6]	....	12.50
Milwaukee, Wis.	13.60[1]	....	13.60	13.60	13.60	13.60	....	13.60
Minneapolis, Minn.	12.90[1]	....	12.90	12.90	12.90	12.90	....	12.90
Omaha, Neb.	11.90[1]	....	11.90	11.90	11.90	11.90	....	11.90
Tulsa, Okla.	12.50[1]	....	12.50	12.50	12.50	12.50	....	12.50
Wichita, Kans.	11.20[1]	....	11.20	11.20	11.20	11.20	....	11.20
Monthly average	12.60	....	12.64	12.62	12.61	12.58	....	12.59

PACIFIC COAST CITIES

	January		February	March	April	May	June	
Portland, Ore.	14.50	....	14.50	14.50	14.50	14.50	....	14.50
San Francisco, Calif.	14.00	....	14.00	14.00	14.00	14.00	....	14.00
Seattle, Wash.	14.50	....	14.50	14.50	14.50	14.50	....	14.50
Monthly average	14.33	....	14.33	14.33	14.33	14.33	....	14.33

Note: Superior figures show day of month changes became effective, except January 1. Prices without superior figures prevailed throughout the month under which they appear. In most instances the dealer margin is considered as 3 cents per gallon.

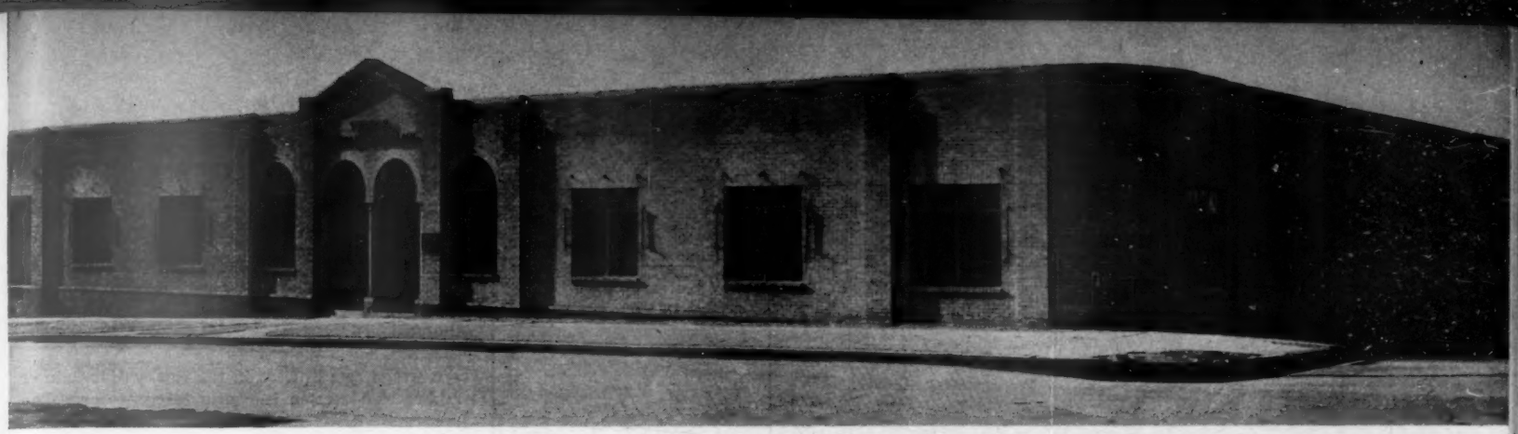
On the basis of the civilian motor-fuel market prevailing prior to June 29, eastern petroleum suppliers were losing money at an approximate rate of $1,000,000 daily because of the higher cost of transporting most of their requirements by tank cars. At the insistence of suppliers and confronted with irrefutable evidence of early extinction unless relief was granted, Leon Henderson, director of OPA, June 29 authorized an advance of 2.5 cents per gallon on gasoline prices in the rationed area.

Midwestern, Central, Pacific Coast, and several cities in the southeastern states started the last half of the year with prices unchanged from January 1, or slightly under the prewar quotations.

Costs have increased throughout the country, not in direct ratio to the increment in the rationed area which is largely dependent on other sections of the nation for supplies, but none the less by substantial margins. Transportation restrictions limit the use of tank cars to hauls of 100 miles or more. Refinery yields of gasoline have been consistently lowered, adding indirectly to the expense of tank-wagon deliveries. But the OPA has remained adamant in its stand against higher prices in all areas where suppliers are unable to show substantial increases in direct costs of distribution.

Four Cycles of Advance

There were four distinct cycles in the advance of eastern gasoline prices. OPA authorized advances of 0.3 cent per gallon January 23; 0.5 cent, March 27; 0.4 cent April 30, and 2.5 cents per gallon June 29. Only the latest raise caused any significant reaction and then it came from politicians rather than directly from consumers. Legislation is pending congressional action which would prevent OPA from exercising its price-control powers in areas as a unit. Chief complaint came from southeastern states where, it is contended, dislocated tanker service along the Atlantic seaboard has not increased the cost of transportation there because main deliveries are still made, as in the past, through pipe-line facilities. The objective of southeastern politicians is to force OPA to spread the higher costs prevailing in any one section among consumers throughout the country. This policy, OPA ob-



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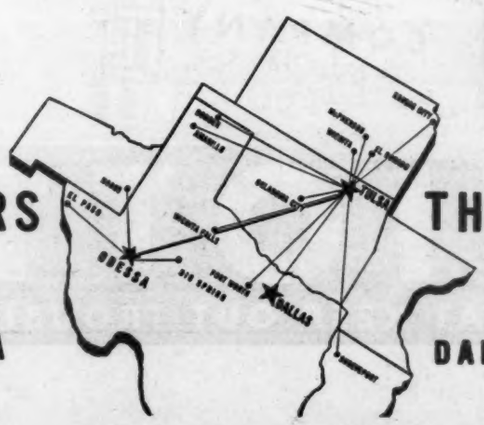
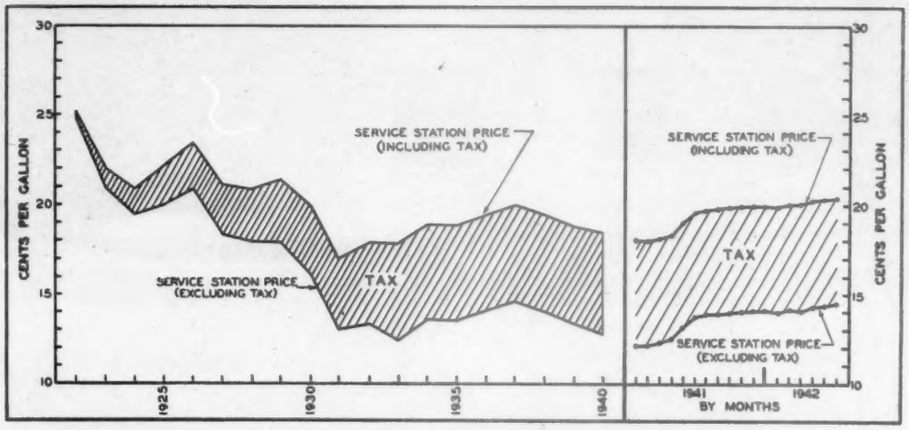


SERVICE THAT COVERS THE MID-CONTINENT

TULSA — **DALLAS and ODESSA, TEXAS**



Higher eastern prices had relatively mild influence on national averages

jects, would be the antithesis of the fight against inflation.

The average service-station price of motor fuel in 14 selected Atlantic Coast and New England cities stands now at 16.30 cents per gallon, an increase of 3.70 cents over the January 1, 1942, figure. The average in the southeastern group of cities does not reflect the same uniform increase because of the inclusion of several points outside the rationed area where no advances were authorized.

Average retail prices in the Rocky Mountain or midwestern section is nearly 0.5 cent per gallon lower now than at the start of the year, chiefly because of a reduction of 3 cents at Salt Lake City, Utah. A less severe decline of 0.5 cent at Albuquerque, N. M., contributed to the average reduction. Other points in the eight states are unchanged. Prices were static on the Pacific Coast and the average in the 14 Central states started the second half only 0.01 cent per gallon below the January 1 figure.

The current cost of shipping gasoline from the East Coast and Gulf Coast districts to New York via tank cars is $1.857 per barrel compared to a normal tanker rate of 40 to 50 cents per barrel.

Railroad freight rates shown in the accompanying table have prevailed throughout the first 7 months of the year and have been extended until October 1942. Rates are in cents per gallon, except for gas oil and residual fuel which are per barrel.

FROM TULSA (GROUP 3)

Destinations—	Gasoline, kerosene	Distillate fuel oil	Gas oil or residual
Baltimore	$.04158	$.02700	$1.55400
New York	.04290	.03848	1.61616
Boston	.04488	.03996	1.67832
Philadelphia	.04158	.03700	1.55400

FROM EAST TEXAS AND TEXAS GULF

Baltimore	.04290	.03848	1.61616
New York	.04422	.03922	1.64724
Boston	.04554	.04144	1.74048
Philadelphia	.04356	.03848	1.61616

FROM WOOD RIVER, ILL. (St. Louis)

Baltimore	.02640	.02590	1.08780
New York	.02838	.02812	1.18104
Boston	.03102	.02960	1.24320
Philadelphia	.02772	.02738	1.14996

FROM WHITING, IND.

Baltimore	.02442	.02368	.99456
New York	.02640	.02516	1.05672
Boston	.02640	.02590	1.08780
Philadelphia	.02508	.02516	1.05672

Extensive New Pipe-Line Work Belies Tight-Material Curb

(Continued from Page 80)

an equal capacity, operating under peacetime conditions. But under wartime conditions disruption of tanker schedules, due to operating by daylight with frequent changes in courses, tankers in recent months have been requiring more steel per barrel transported than a large-diameter pipe line would require. However, protection of tankers has improved and therefore tanker shipments are likely to increase somewhat. Economic as well as strategical considerations favor extensive overland transportation through pipe lines at a time when naval hostilities threaten to persist along the Atlantic Coast.

But, because of the need for steel for carrying on the war, constructive steps toward pipe-line expansion have been delayed. There have even been difficulties in obtaining permits to use old pipe and old pumping equipment. Relief came early in June when announcements from government sources indicated that the way will be cleared for furnishing steel for important pipe-line projects.

Roughly speaking, 1942 projects may be divided into several classes. The most important projects

NON-STOP PROTECTION FOR OIL AND WATER PUMPS
TWIN
STRAINERS
They are called "Twin" strainers because they have duplicate cylinders and strainer baskets. When one basket becomes fouled, you throw the flow through the other. Then you clean the fouled basket. The straining never stops for an instant.
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ELLIOTT
STRAINERS THAT KEEP OUT TROUBLE

for the national welfare are those which have been planned as a group by pipe-line executives working through subcommittees of OPC. These men have a clear picture of the pipe-line resources of the country as well as a comprehension of what should be done to provide for transportation needs. In addition to these, other important projects have been started this year which were sanctioned by OPC before the subcommittees began to function. Still other projects have been presented by certain interests to Congress for authorization. Since projects to be built in the second half of the year are receiving more attention at the moment than work done in the first half, they will be discussed first. Project numbers used to designate them in reports and government announcements in recent weeks are given after discussion of each project.

Before dealing with them, mention should be made of certain unusual features of 1942, such as the fact that approximately a quarter of this year's construction so far has been for looping. Standard Oil Co. of California has utilized for crude-oil service a large amount of pipe which has been in natural-gas lines. In West Texas Shell Pipe Line Co. has taken over the operation of nearly all major pipe-line facilities through an arrangement which has been made for the period when pipe-line runs from that area are much reduced because of the curtailment of tanker movement from the Gulf Coast. Reversals and conversions to different types of service are planned on a large scale. The flow of three refined-products lines across Pennsylvania is being reversed; two of these lines have been converted to crude-oil service. The program also calls for reversing and converting lines of three companies in Texas, Louisiana and Arkansas from crude oil to refined products service.

Emergency Line Most Important

Probably the most important pipe line ever contemplated in the history of the industry is the 24-in. crude-oil pipe line on which work is scheduled to start at the end of this month. Present plans call for the laying of 550 miles of pipe from Longview, Tex., to a main northern terminal in Illinois from which laterals are to extend. The project is to deliver between 300,000 and 350,000 bbl. daily. The line will be built by War Emergency Pipeline, Inc., for Defense Plant Corp., an R.F.C. subsidiary. From the terminals which have been announced at the northern end, oil would move northward and eastward by pipe line, railroad and river barge. But to be fully effective to meet emergency requirements, the line should be extended eastward to the New York and Philadelphia refining centers; this would take more than 1,000 additional miles of pipe. Aerial surveys for the route were made last summer. (Project 9.)

Negotiations are proceeding for making possible the early construction of the project for 292 miles of 8-in. and 10-in. second-hand pipe by Bayou Pipe Line System for moving products from Houston via Beaumont, Tex., to Baton Rouge, La., to feed the Plantation Pipe Line, the capacity of which is being increased from 60,000 to 90,000 bbl. daily by the installation of 14 intermediate pump stations between Baton Rouge and Greensville, N. C. The Bayou Pipe Line will have a capacity of 60,000 bbl. daily; construction of this project is being handled by the Shell Pipe Line Co. organization at Houston, Tex. (Project 2.)

Elaborate plans have been made for an arrangement known as Project 1 for augmenting and combining facilities of existing pipe-line systems so as to move the largest amounts practicable from the Southwest to the Northeast. This calls for increasing crude-oil movement from Texas to Illinois by 41,000 bbl. daily, of which 25,000 bbl. will be moved out of Illinois by pipe lines and 16,000 bbl. by lake tankers and rail. Between Dallas, Tex., and Stuart, Okla., 110 miles of 8-in. and 10-in. will be laid for loops. Plans required for needed expansion include looping the Stanolind, Ajax and Texas-Empire systems, as well as the installation of three stations and other pumping equipment on the Texas-Empire Pipe Line. Related to this undertaking are plans for installation of additional pumps at three Buckeye Pipe Line stations in Ohio, the laying of 152 miles of 8-in. pipe across Ohio by Illinois Pipe Line, as well as the conversion of the Tuscarora system in Pennsylvania from crude oil to products service with flow reversed from westward to eastward; also the installation of two stations in eastern Pennsylvania and Maryland on Southern Pipe Line. (Project 1.)

Authorization has been granted for increasing shipment of refined products eastward by several measures including installation of pumping equipment on the Shell line at Muncie, Ind.; the reversal of flow of Susquehanna Pipe Line between Cleveland, Ohio, and Twin Oaks, Pa.; reversal of flow and conversion to crude-oil service of Keystone Pipe Line between Pittsburgh and Philadelphia, Pa., through which 20,000 bbl. is now moving daily; and provision for completing Sinclair Refining Co.'s gasoline line between Marcus Hook, Pa., and Steubenville, Ohio, for handling eastward products shipments of 12,000 bbl. daily received from river barges.

According to a recent announcement of J. R. Parton, OPC director of transportation, provision will be made for constructing a products line from Fostoria to Akron, Ohio, to feed 10,000 bbl. daily into the Susquehanna line. This is scheduled for completion September 30.

Another important undertaking for moving refined products northeastward is that of the Project Five Pipe Line Co., organized for utilizing lines of Texas, Magnolia and Gulf which have been moving crude southward but which are to

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be reversed to move products northward to El Dorado, Ark. From this point to Helena, Ark., a 158-mile 10-in. line of reclaimed pipe is to be laid under the supervision of the Gulf organization. This is due for completion November 1. (Project 5.)

The advantages of building the Longview, Tex., to Paducah, Ky., project for moving refined products have been studied by OPC officials.

Transportation Director Parten recently reported to a Senate committee that the Government regards December 31 as the date for completion of the work. In planning for this project, it has appeared that it could be built with 12-in. and 14-in. reclaimed pipe totaling more than 500 miles which might be obtained from several existing systems.

The proposed line would be used in connection with pipe-line facilities between Longview and the Gulf Coast which are now in crude-oil service; these could be converted to refined-products service and reversed for handling 60,000 bbl. daily which could be forwarded eastward from Paducah by river barge and tank car. (Project 7.)

Approval of OPC has been given to the laying of a 220-mile 8-in. refined-products line across the northern part of Florida to handle 35,000 bbl. daily for transshipment to barges which will distribute along the coast of southeastern states. The project is to be built of reclaimed pipe which will be procured by taking up and moving a crude line of American Liberty Pipe Line Co. extending from East Texas to the Gulf Coast.

The prospects for building a crude-oil line from Tinsley, Miss., to Charleston, S. C., or Savannah, Ga., appear to be doubtful. An appropriation of not more than $13,000,000 for the project was included in the transportation bill passed by the House of Representatives of Congress. However, the line cannot be built unless the Army and Navy are convinced that it is necessary for military purposes and unless WPB finds that critical materials can be spared for its construction. Secretary of War Stimson has stated flatly that the project does not justify the expenditure of steel required. It is also opposed by Defense Transportation Director Eastman and Petroleum Coordinator Ickes. This line is regarded as a compromise of the original Tapco scheme and does not appear to have promise of contributing to an effective solution of the transportation problem.

In considering what has been accomplished in pipe-line construction in the United States during the first half of 1942, the program of Phillips Petroleum Co. for building feeder and outlet lines serving Borger, Tex., refinery operations is recognized as the most extensive. Altogether it includes a total of 554 miles of 6-in. and 8-in. pipe. Of this, approximately 317 miles is for looping the refined-products trunk-line system in sections between Wichita, Kans., and the Kansas City and St. Louis, Mo., terminals. About 237 miles is being laid from Hobbs, N. M., and Goldsmith, Tex., to Borger, Tex., for the transportation of gasoline-plant products. Although these projects have carried high ratings in the war-production program, there have been long delays, due to difficulties in obtaining pipe.

Kansas Outlets Expanded

The most significant 1942 work done on crude lines has been for increasing Kansas outlets and for enlarging trunk-line facilities for moving crude northward from the Mid-Continent area.

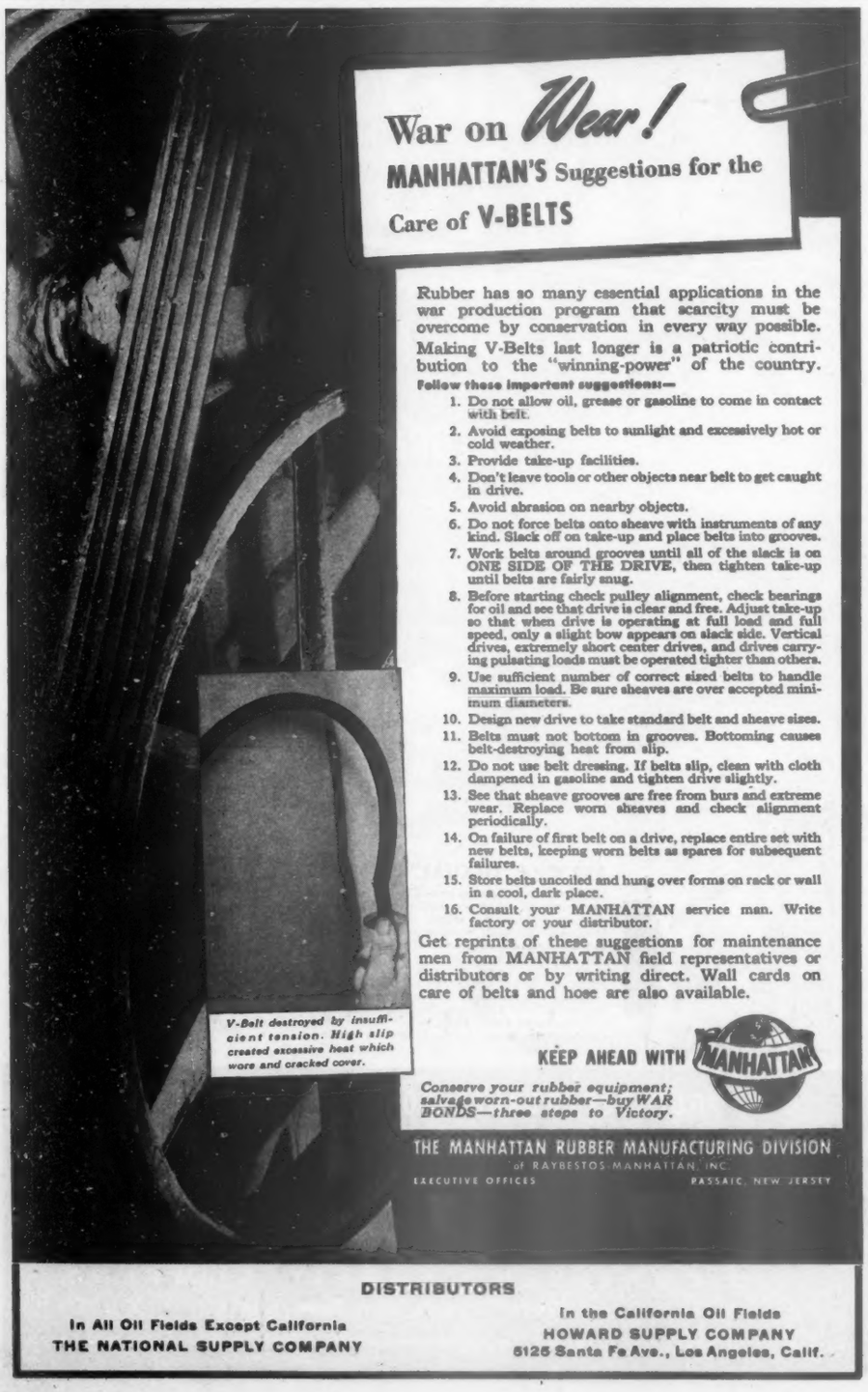
Kansas trunk-line capacity has been increased by 34 miles of 10-in. and 12-in. loops laid by Kaw Pipe Line Co.; by 23 miles of 10-in. loops laid by Socony-Vacuum Oil Co., Inc.; by a program of Texas-Empire Pipe Line Co., including the installation of pump stations at Eureka, Hiattville and Humboldt, Kans.; and the laying of some loops; and by a program of Stanolind Pipe Line Co., including the installation of pumping units at the Laton, Kans., and Freeman, Mo., stations and looping between Washington, Kans., and Freeman, Mo., which completes an expansion of this part of the company's trunk line which was started last year.

A general increase in the northward movement of oil has been effected by Sinclair Refining Co.'s revamping of trunk-line facilities consisting principally of looping in Oklahoma and renewing the operation of Greeley, Kans., and Buchner, Mo., stations which had been out of commission. Texas-Empire Pipe Line Co. is adding to pumping equipment at the Centralia, Mo., station and is looping between Heyworth and Wilmington, Ill. Texas Pipe Line Co. expanded its crude-oil system in southern Illinois and laid a 101-mile 8-in. crude line from Apache to Seminole, Okla.

The principal natural-gas projects of the first part of this year are completion of the 90-mile 26-in. loop near Muscatine, Iowa, for Natural Gas Pipeline Co. of America; laying of about 200 miles of line in Illinois and Michigan as the first part of a 250-mile expansion program of Panhandle-Eastern Pipe Line Co.; and the laying of 135 miles of 12-in. and 18-in. by Arkansas Louisiana Natural Gas Co. to serve a war industry in Arkansas.

Outside the boundaries of the United States, construction organizations from this country have been engaged in two important undertakings. One of these is a 100-mile 12-in. line which has been completed for a Sinclair subsidiary in eastern Venezuela. Near the Arctic Circle, work on a 4½-in. o.d. crude-oil line was started within recent weeks which is to extend from the Fort Norman area to White Horse in northwestern Canada.

The value of petroleum and natural-gas pipe lines for the national welfare has been demonstrated with sufficient effectiveness in this war period to convince government authorities of the need for expanding pipe-line facilities of all kinds.


War on Wear!
MANHATTAN'S Suggestions for the Care of V-BELTS
Rubber has so many essential applications in the war production program that scarcity must be overcome by conservation in every way possible. Making V-Belts last longer is a patriotic contribution to the "winning-power" of the country.
Follow these important suggestions:—
1. Do not allow oil, grease or gasoline to come in contact with belt.
2. Avoid exposing belts to sunlight and excessively hot or cold weather.
3. Provide take-up facilities.
4. Don't leave tools or other objects near belt to get caught in drive.
5. Avoid abrasion on nearby objects.
6. Do not force belts onto sheave with instruments of any kind. Slack off on take-up and place belts into grooves.
7. Work belts around grooves until all of the slack is on ONE SIDE OF THE DRIVE, then tighten take-up until belts are fairly snug.
8. Before starting check pulley alignment, check bearings for oil and see that drive is clear and free. Adjust take-up so that when drive is operating at full load and full speed, only a slight bow appears on slack side. Vertical drives, extremely short center drives, and drives carrying pulsating loads must be operated tighter than others.
9. Use sufficient number of correct sized belts to handle maximum load. Be sure sheaves are over accepted minimum diameters.
10. Design new drive to take standard belt and sheave sizes.
11. Belts must not bottom in grooves. Bottoming causes belt-destroying heat from slip.
12. Do not use belt dressing. If belts slip, clean with cloth dampened in gasoline and tighten drive slightly.
13. See that sheave grooves are free from burs and extreme wear. Replace worn sheaves and check alignment periodically.
14. On failure of first belt on a drive, replace entire set with new belts, keeping worn belts as spares for subsequent failures.
15. Store belts uncoiled and hung over forms on rack or wall in a cool, dark place.
16. Consult your MANHATTAN service man. Write factory or your distributor.
Get reprints of these suggestions for maintenance men from MANHATTAN field representatives or distributors or by writing direct. Wall cards on care of belts and hose are also available.
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INTEREST DIRECTED MAINLY TO SOUTH FLANK OF BARTON ARCH

By CARL HOOT

DRILLING activity in Kansas for the first 6 months of 1942 compared favorably with the first half of last year but fell off some 40 per cent over the last half of 1941. Comparative figures for the three 6-month periods are: Total completions the first half of 1941 were 978. Drilling was stepped up considerably the latter half of the year when 1,134 wells were completed. This year 724 wells were reported by the end of June. Included in this figure were 148 wildcat wells, of which 18 produced 7,046 bbl. initial potential. The number of wells being drilled in Kansas is holding steady with possibly an upturn in the number of exploratory wells over the past several weeks.

Cambrian Production Extended

Twelve of the 18 successful wildcats produced better than 100 bbl. a day. In Barton County Helmerich & Payne 1 Merten, NW NW NE 10-19-15w, pumped 168 bbl. of oil a day from Lamotte sand topped at 3,551 ft. It is a southeast extension to the Alberta-Otis structure, the only area where Cambrian production is found outside of the northwestern ends of the Central Kansas uplift. A few Arbuckle and Lansing-Kansas City wells were drilled in this area but found small production.

Peace Creek Pools Combined

In Reno County the new Peace Creek Viola lime trend was extended to the northeast and southwest. On the northeastern end Hinkle Oil Co. and Central Petroleum Co. 1 Schweizer, SE SE NW 31-22-9w, pumped 774 bbl. a day from Viola at 3,702 ft. to become the opener of the Schweizer pool, which at this time has seven oil wells completed and several drilling. At the southwestern extremity, Simpson Oil Co. 1 Souder, SW NE NE 32-23-10w, discovery well of the Southwest Peace Creek pool, flowed an estimated 1,106 bbl. a day from Viola at 3,671-78 ft. The intervening area of some 7½ miles has been the most active drilling area of the entire state during 1942. At the close of the 6 months' period the five pools along this trend, Southwest Peace Creek, Peace Creek, Northeast Peace Creek, Hendrickson, and Schweizer, had been joined by producing wells and at the recommendation of the Kansas Nomenclature Committee were combined and called Peace Creek.

Smyres Pool Development Consistent

Another area which developed rapidly after its discovery was the Smyres pool of Rice County, on the eastern flank of the Central Kansas uplift. In February Nelson Drilling Co. 1 Smyres, NE NE SW 36-19-6w, was completed for 3,000-bbl. potential after flowing 38 bbl. of oil in 4 minutes through choke. Pay was from the Mississippian chat topped at 3,323 ft., with the first oil show at 3,339 ft.

Northwest Kansas

On a trend that may continue into Nebraska, the Ray pool of Phillips County spread rapidly during 1942 and has extended Lamotte sand production into Norton County. At midyear the field consisted of some 40 producing wells, with 2 dry holes on the southwest flank. Early in February Derby Oil and Crow Drilling 1 Steele, N½ NW

PRODUCTION 1939-1942

(In thousands of barrels)

WESTERN KANSAS

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Barber County:											
Whelan	29	37	39	56	70	89	93	3	14	18	16
Miscellaneous	13	16	13	14	9	3	21	3	4	4	4
Total	42	53	52	70	79	92	114	11	18	22	22
Barton County:											
Ainsworth-Stickney	252	237	251	217	196	231	287	49	58	67	77
Ainsworth, NW, W	*252*	*237*	*251*	*217*	*196*	*231*	*287*	*49*	*58*	*67*	*70*
Stickney							*26*	*0*	*0*	*0*	*7*
Beaver-Feltes	161	117	128	129	173	219	231	22	32	45	49
Beaver and N	*161*	*117*	*93*	*100*	*114*	*86*	*84*	*22*	*25*	*32*	*36*
Feltes			*25*	*29*	*59*	*133*	*147*	*0*	*7*	*13*	*13*
Bloomer	838	741	867	917	1,011	1,220	1,267	156	221	252	252
Bloomer	*779*	*682*	*804*	*847*	*929*	*1,177*	*1,131*	*139*	*201*	*222*	*222*
Breford	*59*	*59*	*59*	*67*	*80*	*137*	*132*	*17*	*18*	*28*	*29*
Miscellaneous			*4*	*3*	*6*	*7*	*4*	*0*	*2*	*2*	*1*
Kraft-Prusa	144	245	340	336	570	835	1,088	31	100	152	211
Silica-Raymond	2,667	3,012	2,602	3,156	3,289	4,426	3,994	609	775	861	872
Silica	*2,513*	*2,880*	*2,460*	*2,957*	*3,074*	*3,991*	*3,598*	*560*	*723*	*783*	*781*
Raymond	*121*	*103*	*108*	*168*	*182*	*269*	*319*	*41*	*41*	*64*	*65*
Wenke and W	*3*	*29*	*34*	*31*	*33*	*66*	*56*	*8*	*9*	*12*	*11*
Miscellaneous			*6*	*7*	*8*	*9*	*21*	*0*	*2*	*2*	*6*
Davidson	5	4	5	4	4	5	32	2	2	2	5
Eberhardt	12	10	11	12	11	11	53	4	4	4	9
Rick	17	16	18	14	15	17	46	5	5	5	7
Lanterman	21	22	23	22	26	78	63	6	6	10	10
Miscellaneous	53	88	61	52	90	89	43	11	12	12	10
Total	4,170	4,492	4,306	4,859	5,385	7,131	7,130	895	1,235	1,529	1,502
Clark County:											
Morrison	19	14	10	9	6	7	5	2	2	2	1
Ellis County:											
Bemis-Walters	1,423	1,456	1,615	1,804	2,115	2,753	2,676	306	433	489	487
Bemis-Shutts	*1,257*	*1,287*	*1,412*	*1,501*	*1,794*	*2,393*	*2,291*	*266*	*372*	*422*	*415*
Koblitz		*1*	*10*	*31*	*44*	*87*	*38*	*2*	*4*	*8*	*8*
Marshall	*55*	*49*	*44*	*71*	*91*	*91*	*117*	*14*	*15*	*17*	*22*
Walters	*111*	*119*	*149*	*201*	*186*	*223*	*230*	*24*	*41*	*42*	*42*
Blue Hill	23	20	33	63	84	112	83	4	14	19	20
Burnett & S	18	190	752	1,003	1,367	1,909	1,606	10	132	189	208
Emmeran	4	4	4	4	4	4	19	1	1	2	4
Herzog						7	18	0	2	2	3
Ruder	44	39	35	28	34	29	30	15	12	12	13
Miscellaneous	137	110	97	100	83	120	77	25	20	28	20
Total	1,649	1,819	2,536	3,002	3,683	4,923	4,509	361	614	737	755
Ellsworth County:											
Stoltenberg-Wilkins	179	225	319	739	1,048	1,379	1,257	51	175	231	233
Stoltenberg	*104*	*106*	*169*	*512*	*744*	*935*	*881*	*22*	*102*	*166*	*165*
Wilkins	*60*	*111*	*143*	*216*	*299*	*439*	*370*	*13*	*42*	*62*	*63*
Heiken	*15*	*8*	*7*	*11*	*6*	*5*	*6*	*4*	*4*	*3*	*5*
Lorraine	305	296	292	242	221	240	230	89	87	89	84
Total	484	521	611	981	1,269	1,619	1,487	140	262	320	317
Finney County:											
Nunn	16	19	19	16	15	12	17	1	2	2	2
Graham County:											
Morel	6	15	40	48	49	61	105	1	6	6	8
Miscellaneous					5	5	14	0	0	2	2
Total	6	15	40	48	54	66	119	1	6	8	10
Harvey County:											
Halstead	82	102	69	66	60	55	52	21	21	20	18
Hollow-Nikkel	447	300	239	282	255	258	178	116	109	90	56
Sperling	38	23	23	23	23	28	24	7	7	8	7
Total	567	425	331	371	338	341	254	144	137	118	81
Kearny County:											
Patterson						6	12	0	0	2	2
Kingman County:											
Cunningham	127	233	140	148	190	270	353	36	54	80	80
McPherson County:											
Bornholdt-Welch	80	120	275	754	846	937	884	35	172	179	190
Bornholdt & W	*9*	*54*	*215*	*703*	*798*	*883*	*822*	*1*	*140*	*151*	*151*
Smyres							*17*	*0*	*0*	*0*	*9*
Welch & E	*70*	*66*	*60*	*51*	*48*	*54*	*45*	*34*	*32*	*28*	*30*
Chindberg	71	51	49	47	43	41	39	29	31	30	30
Graber-Hesston	511	455	506	441	456	495	494	119	136	136	130
Henne							43	0	0	0	11
Johnson	53	42	37	46	43	44	45	15	16	16	14
Lindsborg	12	14	16	15	15	15	29	2	2	2	10
McPherson	41	37	34	31	30	27	27	33	28	29	24
Ritz-Canton	985	769	707	665	697	669	603	242	264	248	231
Roxbury	21	30	30	84	139	192	187	1	25	37	37
Voshell	288	286	262	300	290	296	283	112	102	101	87
Miscellaneous	4	3	4	4	4	16	13	1	1	9	4
Total	2,066	1,807	1,920	2,387	2,563	2,734	2,647	589	777	785	768
Ness County:											
Aldrich	21	28	75	49	55	62	77	10	13	13	12
Norton County:											
Hewitt						5	4	0	0	1	1
Pawnee County:											
Pawnee Rock & E	29	20	21	30	54	109	145	10	13	24	28
Zook							2	0	0	0	2
Total	29	20	21	30	54	109	147	10	13	24	30
Phillips County:											
Bow Creek		3	1	2	3	4	3	1	2	1	1

(Continued on next page)

NW 9-6-20w, pumped 183 bbl. a day from Lamotte sand found at 3,613 ft. and was bottomed in granite at 3,638 ft. It is a mile south extension to the Ray pool and was given the name Southeast Ray. Although the Ray pool has enjoyed intensive drilling, the 1 Steele remains the only well in the new pool.

KANSAS

Summary of Wells Completed First Half of 1942

Pool—	Comp.	Oil	Prod.	Gas	Dry
Ainsworth	10	5	4,836	0	5
Beaumont	5	4	130	0	1
Beaver and N.	4	3	692	0	1
Bedford	9	8	11,433	0	1
Bemis-Shutts	13	12	20,180	0	1
Big Creek	3	1	89	0	2
Bloomer	7	3	7,405	0	4
Burnett	3	3	3,184	0	0
Chase	15	11	8,042	0	4
Couch	2	1	1,548	0	1
Cunningham	13	8	4,859	1	4
Davidson	4	3	1,051	0	1
Dayton	6	6	4,986	0	0
Eberhardt	2	1	343	1	0
Edwards	1	1	3,000	0	0
El Dorado	11	11	236	0	0
Fairport	3	2	434	0	1
Forest Hills	4	2	534	0	2
Frog Hollow	13	10	5,261	0	3
Geneseo	6	6	12,230	0	0
Gorham	5	5	1,386	0	0
Greenvale	10	9	8,434	0	1
Gustason	1	1	240	0	0
Hall-Gurney	18	15	10,571	0	3
Henne	5	4	5,331	0	1
Keesling	8	5	1,910	0	3
Kraft-Prusa	39	31	33,852	0	8
Lake City	1	1	343	0	0
Laton	5	5	1,644	0	0
Lindsborg	6	6	3,924	0	0
Lost Springs	11	9	2,136	0	2
Max	3	2	986	0	1
McLouth	47	7	388	23	17
Morel	2	2	4,551	0	0
Neidenthal	1	1	1,365	0	0
Pawnee Rock, East	2	1	284	1	0
Peace Creek:					
Southwest Peace Creek (discovery)*	1	1	1,106	0	0
Peace Creek	21	20	39,671	0	1
Northeast Peace Creek	14	13	19,660	0	1
Hendrickson	10	10	6,962	0	0
Schweizer	4	4	904	0	0
Total	50	48	68,303	0	2
Ray	16	14	22,873	0	2
Raymond	7	5	3,775	0	2
Ritz-Canton	2	1	10	0	1
Rusch	1	1	102	0	0
St. John	2	1	58	0	1
Silica	21	15	16,392	0	6
Smyres	9	8	8,051	0	1
Stafford	4	2	3,195	0	2
Trapp	21	19	16,778	0	2
Westhusin	1	1	267	0	0
Wherry	4	2	250	0	2
Wilkins	3	2	3,099	0	1
Zenith	13	11	5,278	0	2
Zyba	2	1	214	0	1
Zook	1	1	192	0	0
Miscellaneous counties:					
Butler	9	6	751	0	3
Greenwood	10	7	126	0	3
Others	103	45	17,434	5	53
Total fields	576	394	333,860	31	151
Wildcats	148	16	6,988	0	132
Total completions	724	410	326,872	31	283

*Discovery well of Southwest Peace Creek carried in wildcat total.

Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	138	92	9	37	402,332
February	135	86	3	46	332,507
March	86	38	1	47	268,320
April	131	72	4	55	426,407
May	108	50	7	51	299,499
June	126	72	7	47	414,766
First half 1942	724	410	31	283	2,143,831
First half 1941	978	692	25	261	2,888,129
Difference	254	296	6	36	744,298

Summary of Wildcats Completed First Half of 1942

County—	Comp.	Oil	Prod.	Gas	Dry
Barber	4	1	41	0	3
Barton	13	3	866	0	10
Butler	3	1	198	0	2
Cowley	11	2	819	0	9
Ellis	6	0	0	0	6
Ellsworth	4	0	0	0	4
Greenwood	3	1	10	0	2
Jefferson	8	0	0	0	8
Leavenworth	7	0	0	0	7
Marion	5	1	75	0	4
McPherson	3	0	0	0	3
Norton	6	0	0	0	6
Phillips	3	0	0	0	3
Pratt	5	0	0	0	5
Reno	8	2	1,364	0	6
Rice	6	1	3,000	0	5
Rooks	9	3	585	0	6
Russell	10	0	0	0	10
Stafford	11	0	0	0	11
Sumner	1	1	30	0	0
Others	21	0	0	0	22
Total	148	16	6,988	0	132

WESTERN KANSAS (continued)

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Dayton	.....	.....	.....	.....	.....	4	34	0	0	2	8
Ray & SE	.....	.....	.....	.....	66	175	230	0	0	24	46
Total	.....	3	1	2	69	183	467	1	2	27	55
Pratt County.											
Cairo	.....	.....	2	8	15	13	10	0	4	4	2
Iuka	13	14	14	21	27	30	32	3	5	7	9
Total	13	14	16	29	42	43	42	3	9	11	11
Rush County:											
Otis-Albert	392	285	199	193	96	157	229	27	33	40	36
Otis	*287*	*215*	*152*	*151*	*45*	*86*	*160*	*17*	*19*	*22*	*19*
Albert	*105*	*70*	*47*	*42*	*51*	*72*	*69*	*10*	*14*	*18*	*17*
Miscellaneous	.....	.....	.....	.....	1	.....	1	0	0	1	1
Total	392	285	199	193	97	157	230	27	33	41	37
Reno County:											
Abbyville	15	15	14	12	12	25	28	4	6	7	9
Buhler	107	78	46	29	28	46	19	2	10	10	9
Burrton	1,609	1,577	1,360	1,265	1,253	1,286	1,102	447	442	425	406
Peace Creek	.....	.....	.....	.....	.....	36	299	0	0	12	73
Hilger	129	124	126	129	134	131	155	34	33	32	32
Lerado	136	158	140	131	124	136	79	34	33	33	30
Miscellaneous	4	5	4	3	3	.....	8	2	2	2	4
Total	2.000	1,957	1,690	1,469	1,450	1,660	1,690	523	526	521	563
Rice County:											
Chase-Campbell	1,221	1,266	1,164	1,174	1,222	1,524	1,569	280	339	343	352
Geneseo-Edwards	908	845	913	1,001	1,064	1,630	1,593	144	223	277	285
Geneseo	*612*	*612*	*670*	*648*	*705*	*1,161*	*1,128*	*103*	*155*	*188*	*195*
Edwards	*296*	*233*	*243*	*253*	*359*	*469*	*465*	*41*	*68*	*89*	*90*
Bowman	.....	.....	.....	.....	.....	.....	23	0	0	0	7
Hafferman	25	36	42	37	40	46	36	6	10	10	9
Orth & E	31	36	45	40	48	61	53	11	14	15	13
Ploog	33	52	35	35	37	39	38	10	10	14	9
Wherry & E	629	633	703	652	691	402	397	168	211	203	183
Miscellaneous	34	54	35	29	36	47	41	12	11	22	16
Total	2.881	2,922	2,937	2,968	3,138	3,702	3,750	631	818	884	874
Rooks County:											
Dooita	19	18	16	13	27	28	27	4	5	8	9
Laton	57	50	58	136	207	309	336	6	36	68	73
Westhusin	44	42	38	34	41	40	60	7	11	12	14
Miscellaneous	9	9	8	10	15	16	17	5	8	9	7
Total	129	119	120	183	290	293	440	22	60	97	103
Russell County:											
Atherton-Russell	266	244	291	310	237	310	306	75	88	88	83
Atherton & N	*71*	*67*	*129*	*137*	*128*	*82*	*87*	*25*	*38*	*38*	*33*
Russell	*185*	*176*	*162*	*173*	*198*	*228*	*219*	*50*	*50*	*50*	*50*
Big Creek-Vaughn	267	281	277	325	335	463	506	73	96	115	113
Big Creek S. E	*130*	*142*	*150*	*201*	*214*	*308*	*333*	*34*	*49*	*78*	*75*
Niedenthal	*38*	*31*	*25*	*24*	*18*	*21*	*15*	*13*	*10*	*9*	*10*
Vaughn	*99*	*108*	*102*	*100*	*103*	*135*	*158*	*26*	*27*	*27*	*28*
Fairport & N	324	321	312	324	293	281	275	149	144	147	145
Gorham	1,035	1,043	1,096	1,080	1,067	1,359	1,376	274	305	314	334
Greenvale, N. W	24	30	39	51	71	142	228	5	13	34	45
Hall-Gurney	796	895	1,011	1,367	1,500	2,020	1,988	132	303	412	420
Trapp-Sellers	1,933	2,871	2,574	2,949	3,260	4,317	4,511	409	744	830	838
Donovan	4	3	3	3	4	4	18	1	1	1	4
Forest Hill	.....	.....	.....	.....	.....	.....	29	0	0	0	5
Miscellaneous	43	29	29	35	40	129	54	10	11	36	25
Total	4,693	5,718	5,634	6,451	6.896	9,025	9,291	1,129	1,708	1,976	2,012
Scott County:											
Shallow Water	153	104	82	77	69	58	63	8	8	9	9
Sedgwick County:											
Eastborough	120	109	99	86	92	95	80	49	46	46	35
Goodrich	154	103	121	117	117	140	135	34	34	35	35
Greenwich	153	132	126	124	123	119	119	43	42	42	42
Robbins	63	55	55	44	47	31	39	51	52	52	50
Valley Center	164	156	175	193	168	145	114	70	67	66	60
Miscellaneous	15	13	10	6	1	14	1	5	4	7	5
Total	669	468	486	570	548	544	488	252	245	248	227
Stafford County:											
Drach-Fischer-Gates	101	101	94	106	109	131	118	25	25	28	27
Drach	*41*	*31*	*33*	*39*	*41*	*56*	*47*	*11*	*9*	*12*	*13*
Fischer	*13*	*18*	*17*	*23*	*18*	*17*	*13*	*3*	*5*	*5*	*3*
Gates	*47*	*52*	*44*	*45*	*50*	*58*	*58*	*11*	*11*	*11*	*11*
Jordan	18	16	14	18	23	38	47	4	5	6	7
Kipp	10	8	9	14	28	40	43	2	4	6	8
Leesburgh	.....	.....	40	86	60	71	63	1	9	9	11
Richardson	227	230	220	278	244	283	278	59	60	60	60
St. John	71	85	85	90	114	233	142	8	19	23	24
Sittner-Max	101	79	74	136	137	187	245	10	22	35	35
Sittner & S	*63*	*49*	*56*	*108*	*107*	*148*	*123*	*7*	*17*	*26*	*24*
Max-Mueller	*38*	*30*	*17*	*27*	*30*	*40*	*122*	*3*	*5*	*9*	*11*
Snider & S	17	22	20	47	50	56	53	8	13	13	10
Stafford	.....	.....	.....	17	52	106	138	0	4	16	19
Zenith	597	689	738	1,100	1,328	1,846	1,743	97	226	295	305
Bedford	.....	.....	.....	5	63	100	123	0	1	15	22
Schaeffer	.....	.....	.....	.....	5	32	38	0	0	3	6
Miscellaneous	.....	8	4	7	10	15	18	0	8	26	20
Total	1,142	1,238	1,298	1,904	2,223	3,302	3,049	214	395	517	554
Sumner County:											
Caldwell	36	29	31	31	34	33	32	4	4	4	4
Churchill	109	89	91	89	79	77	75	69	63	62	53
Latta	40	56	39	47	48	36	48	7	11	12	15
Oxford & W	180	128	128	110	118	94	107	67	48	48	60
Padgett	39	38	35	38	34	35	32	22	20	20	18
Wellington	361	319	290	217	183	152	135	97	98	98	90
Miscellaneous	32	27	36	35	28	36	37	9	9	9	9
Total	797	686	650	567	523	463	466	275	253	253	249
Trego County:											
Miscellaneous	31	23	26	21	24	19	23	14	8	8	21
Ttl. West. Kans.	22,096	22,983	23,200	26,404	29,060	36,726	35,874	5,299	7,178	8,081	8,298

EASTERN KANSAS

Augusta	236	213	208	217	232	229	262	217	210	218	213
Brandt	50	64	105	110	103	108	105	20	38	40	43
Douglas	13	13	12	37	51	80	10	22	28	36	22
Elbing	218	205	196	204	173	192	149	88	75	74	59
El Dorado	1,388	1,421	1,321	1,331	1,318	1,279	1,286	1,649	1,627	1,568	1,546
Fox Bush	72	64	64	66	67	68	60	164	153	149	158
Keighley-Blankenship	156	148	146	183	157	185	128	187	142	143	147
Haverhill-Kramer*	222	219	213	235	227	296	232	183	177	188	187
Garden-Schaffer	*97*	*92*	*87*	*91*	*82*	*92*	*78*	*57*	*55*	*58*	*57*
Haverhill	*44*	*39*	*39*	*60*	*58*	*119*	*72*	*61*	*63*	*67*	*67*

(Continued on Page 96)

SAFE, ECONOMICAL STORAGE IN FIVE "VOLUMES"

Each strategically located General American Tank Storage Terminal has a storage volume adequate to serve huge quantities of bulk liquids.

Each gives you the capacity, the speed, the protection you need—at lowest cost. You save on freight rates, on handling, on freedom from waste and contamination, on insurance, on wharfage and demurrage charges.

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A DIVISION OF GENERAL AMERICAN TRANSPORTATION CORP.

DISCOVERY RATE MAINTAINED BUT ADDED RESERVES SMALL

By L. P. STOCKMAN

CALIFORNIA'S crude-oil reserves were reduced 53,000,000 bbl. during the first half of 1942 and if this rate continues for the remainder of the current year the reduction in reserves during 1942 will closely approximate the reduction in reserves during 1941 of 116,000,000 bbl. Despite the discovery of nine new fields, Oak Canyon, Union Avenue, Raisin City, Dyer Creek, Turnbull Canyon, Shafter, Helm, Jacalitos and Riverdale during 1941 and discovery of Buena Park and Antelope Plains in 1942 as well as extension work and deeper drilling in proved fields, the state's crude-oil reserves have been consistently reduced since January 1, 1941. The rate of discovery during the past 18 months has been favorable but with few exceptions the discoveries have been of a minor nature and of very little significance from a production standpoint. One of these discoveries, Shafter in Kern County, appears to be headed down the road of oblivion because, unless present plans are changed, Continental Oil Co. is through with the district. The company will continue to produce the two small wells finished in this field to date but when they stop flowing and cannot be returned to production by a cleanout job the holes will be abandoned.

Active Exploration

California prospectors are making a determined attempt to find new commercial accumulations of oil and gas but are not meeting with much success. The rate of discoveries made during the past 18 months indicates the aggressive nature of exploratory work and the fact that prospectors are now drilling in less favorable localities reveals the scope of wildcat drilling and the fact that no stone is being left unturned in the search for new production. It is the present practice to get in and out of a wildcat well as quickly as possible as this permits the drilling of more holes in a specified period of time and keeps drilling crews busy. This is especially important because of the shortage of experienced drillers and derrickmen as large numbers of this skilled labor have gone into defense industries, notably aircraft and shipbuilding plants. It appears quite probable that additional discoveries during the remainder of the current year will be the result of sharpshooting work and careful scrutiny of areas already subjected to prospecting work but which have failed to run true to form. Production possibilities in the Cretaceous, which appeared to show promise several months ago, are not now being given much consideration. The recent abandonment of 3 Cheney Ranch in the Panoche district of Fresno County appears to have taken the edge off formations of this age for the time being.

On the law of averages and based on the discovery rate of 11 new oil fields and 2 gas fields during the past 18 months, it is quite likely that several additional discoveries will be made between now and the end of 1942. As a matter of fact there are two areas now undergoing development that appear as almost certainties for discoveries in the near future. Amerada Petroleum Corp. at the close of June was making preparations to complete 4-6 Truman in the Wheatville district of Fresno County and Shell Oil Co., Inc., has reentered the Yorba Linda district of Orange County in Los Angeles Basin. On a formation test 4-6 Truman flowed at a daily rate of 186 bbl. of 61.8-gravity condensate and 3,958,000 cu. ft. of natural gas from an effective depth of 8,020 ft. so it is quite probable that this well will be completed early in July for the state's first new field in the last half of the year. It is logical to assume that the Wheatville field will be quite similar to Helm and Riverdale as all three are located in the same general area. At Yorba Linda, Shell Oil Co., Inc., will attempt to extend the productive limits of an area that has never been officially recognized as a new field although a core hole drilled back in 1937 indicated the presence of oil and gas on the Olinda fee property at a comparatively shallow depth. Shell's new well will be drilled in 15-3s-9w, and the location places this new well east of the core hole discovery which was shut in immediately subsequent to the conclusion of drilling. Wheatville and Yorba Linda, therefore, can normally be expected to be listed as discoveries during the last half of the current year.

The outlook for the future is so complex and full of uncertainties that it is practically impossible to prognosticate future expectations without using too many qualifications or limitations. It is quite likely, however, that drilling operations will continue at about present levels for the re-

PRODUCTION 1939-1942
(In thousands of barrels)

SAN JOAQUIN VALLEY

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Eastern Sector:											
Arvin	72	382	401	252	143	120	113	2	15	14	15
Edison	426	415	409	456	521	496	514	88	96	111	112
Kern River	1,973	2,252	2,107	1,866	1,925	2,397	2,761	1,391	1,458	1,948	2,199
Mountain View	1,579	1,406	1,268	1,153	980	925	858	177	166	164	164
Mount Poso	2,363	1,944	1,773	1,454	1,676	2,441	3,463	249	284	356	396
Round Mountain	2,059	1,468	1,346	1,345	1,356	1,459	1,863	189	225	236	239
Dyer Creek	.....	.....	.....	.....	.....	3	3	0	0	0	1
Shafter	.....	.....	.....	.....	.....	20	4	0	0	0	2
Total	8,472	7,867	7,304	6,526	6,601	7,861	9,579	2,096	2,244	2,829	3,128
Central Sector—South:											
Canal	800	1,054	1,058	979	918	898	574	15	34	35	37
Elk Hills	1,832	2,002	2,200	2,227	2,162	1,330	1,921	169	196	147	211
Fruitvale	1,245	1,129	1,045	1,027	961	1,119	1,134	173	170	173	170
Greeley	348	463	638	838	1,072	1,404	1,307	15	37	68	76
Paloma	.....	24	34	104	33	21	131	0	5	1	2
Rio Bravo	1,433	1,439	1,476	1,423	2,132	2,399	2,025	24	69	96	98
Strand	3	131	259	268	253	295	224	0	8	12	12
Ten Section	1,615	1,631	1,607	1,911	2,391	2,846	2,254	26	67	111	119
Union Avenue	.....	.....	.....	.....	28	21	33	0	0	2	2
Wasco	163	239	262	315	315	318	261	3	12	13	13
Wheeler Ridge	64	60	57	56	52	51	50	29	34	34	34
Canfield Ranch	5	17	9	6	8	8	7	2	2	1	1
Coles Levee-Tupman	132	413	862	1,728	2,821	2,806	2,338	2	70	108	118
Total	7,642	8,602	9,607	10,882	13,146	13,616	12,259	458	704	801	893
Central Sector—North:											
Helm	.....	.....	.....	.....	.....	1	26	0	0	1	4
Raisin City	.....	.....	.....	.....	1	60	136	0	0	6	9
Riverdale	.....	.....	.....	.....	.....	1	22	0	0	1	4
Jacalitos	.....	.....	.....	.....	.....	5	21	0	0	1	4
Total	.....	.....	.....	.....	1	66	205	0	0	9	21
Western Sector—South:											
North Belridge	2,173	2,193	2,000	1,862	1,795	1,630	1,059	63	71	49	57
South Belridge	205	217	362	389	376	481	379	114	189	207	214
Lost Hills	587	632	746	658	614	649	705	270	264	312	375
McKittrick	651	676	642	672	658	763	900	205	213	220	271
Midway-Sunset	9,797	9,150	9,486	8,932	8,512	8,956	9,981	2,644	2,503	2,740	3,117
Total	13,413	12,868	13,218	12,513	11,955	12,479	13,024	3,296	3,240	3,528	4,034
Western Sector—North:											
Coalinga	2,004	3,721	4,401	5,534	6,326	7,896	8,045	694	906	1,014	1,250
Kettleman Hills	9,989	9,577	8,715	8,006	7,016	6,961	5,756	221	265	282	278
Antelope Plains	.....	.....	.....	.....	.....	.....	13	0	0	0	1
Total	11,993	13,298	13,116	13,540	13,342	14,756	13,814	916	1,171	1,296	1,529
Total San J. V.	41,518	42,635	43,145	43,463	45,045	48,778	48,881	6,766	7,359	8,463	9,600

COASTAL DISTRICT

Ventura Sector:											
Rincon	623	615	716	894	798	775	417	50	74	69	70
San Miguelito	438	514	567	601	699	701	489	28	26	42	25
Ventura Avenue	6,277	6,665	6,338	6,234	6,160	6,722	6,200	251	322	340	381
Ventura-Newhall	1,038	2,297	1,316	1,550	2,015	2,270	839	569	519	568	517
Aliso Canyon	In Ventura Newhall						342	In Ventura Newhall			15
Del Valle	In Ventura Newhall						131	In Ventura Newhall			11
Newhall Potrero	In Ventura Newhall				.....	.....	532	In Ventura Newhall			28
Oak Canyon	In Ventura Newhall						65	In Ventura Newhall			5
Padre Canyon	In Ventura Newhall						164	In Ventura Newhall			18
San Martinez	In Ventura Newhall						85	In Ventura Newhall			6
Total	8,376	10,091	8,937	9,279	9,672	10,468	9,264	898	941	1,019	1,070
Santa Barbara Sector:											
Capitan	466	410	343	307	335	406	104	51	44	51	46
Elwood	793	749	684	605	580	582	329	76	74	59	78
Santa Barbara	56	57	49	40	41	33	31	35	19	17	17
Santa Maria	1,065	918	828	1,393	1,315	1,871	870	131	181	208	199
Santa Maria Valley	1,997	2,290	2,635	3,527	3,387	3,538	2,517	123	141	199	208
Watsonville	5	5	5	4	4	5	5	7	7	7	7
Summerland	6	5	5	4	3	2	3	8	8	8	8
Gato Ridge	.....	.....	.....	.....	.....	.....	542	In Santa Maria			16
Total	4,388	4,434	4,549	5,880	5,665	6,437	4,401	431	474	549	579
Total Coastal d.	12,764	14,525	13,486	15,159	15,337	16,905	13,665	1,329	1,415	1,568	1,655

(Continued on next page)

From Tulsa World

OIL RIGS WILL HELP LICK JAPS

Material Expected to Be Recovered Amounts to 300,000 Tons

Oil producers are studying the proposal of A. M. Singleton, salvage director for the petroleum industry in the bureau of industrial conservation, who last week declared that the scrapping of oil well derricks, primarily in the Mid-Continent area, would mean the salvage of approximately 300,000 tons of badly needed metal for the war effort.

He made the estimate in connection with a recommendation to the petroleum industry war council that oil derricks not absolutely needed be scrapped as quickly as possible. he said that many derricks can be dispensed with and truck-drawn hoisting equipment be used instead.

He estimated that 15,900 derricks in Oklahoma, 3,000 in North Texas and the Texas Panhandle, 10,000 in East Texas and 11,800 in Kansas could be scrapped.

"In searching for additional metal scrap," Singleton declared in his recommendation, "we should certainly not overlook the potential scrap in derricks standing in oil fields where it is possible to operate

FRANKS MFG. CORP.
WELL SERVICING AND DRILLING UNITS

Truck-Mounted Telescoping Derrick Unit Will Service up to 100 Wells

Saving 500 TONS OF STEEL FOR TANKS

The Franks telescoping derrick servicing unit, originally designed and produced in 1937 to effect economies, IS THE ANSWER TO TODAY'S NEED WHEN NEW WELLS GO ON THE PUMP.

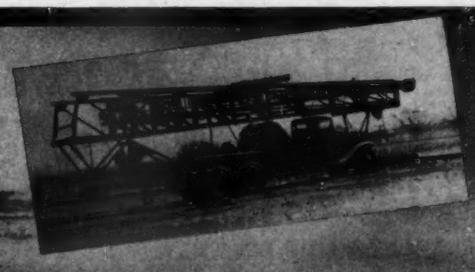
It is the most economical method of servicing wells to obtain oil for our planes, tanks, ships, and industrial factories—AND IT SAVES STEEL, an average of 500 tons per unit.

Each Franks unit—complete with drawworks, power plant, crown block, stacking board, and its own mechanically raised and lowered derrick—will service from 50 to 100 wells, depending on location.

Thus, it eliminates the need of and cost of from 50 to 100 permanent steel derricks; 50 to 100 crown blocks where the practice is to keep them permanently installed; saves in rig-up and tear-down since the unit is 100 per cent portable and keeps its block and lines permanently strung.

See the Franks section in the Composite Catalog or Write for further information.

Franks truck-mounted 90' telescoping derrick servicing unit on location. Right is unit in "over-the-road" position.



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FRANKS MFG. CORP.
WELL SERVICING AND DRILLING UNITS
TULSA, OKLAHOMA

mainder of the year in order to support exploration work and permit a limited amount of development work in proved fields. There is little prospect of any great increase in California drilling because, under present wage scales, there is no incentive for drillers to leave shipbuilding activities and reenterd the oil business and for the additional reason the number of drillers still active is quite small. A recent survey indicated that approximately 2,700 additional wells could be drilled in fields producing heavy crude oil at a commercial rate but one must not lose sight of the fact that the man-power shortage in field crews precludes the drilling of any but a very small percentage of these locations. Unless drilling crews are moved in from the Mid-Continent and Gulf Coast areas or California drilling crews released from defense work there cannot be any great increase in present drilling.

Crude-oil production during the first 6 months of 1942 exceeded production during any 6-month period since 1938 and was at an annual rate of approximately 230,700,000 bbl. During the current year, more emphasis is being laid on the necessity of stepping up production of heavy crude and reduction, within limitations, in production of the lightest of crude oil. It is quite likely that this policy will be followed out during the remainder of the present year due to the large demand for fuel oil and the consistently declining demand for motor fuel. Fuel-oil requirements are expected to increase later in 1942 and gasoline sales are expected to register a decline during the same period. Any abnormal condition, such as gasoline rationing or other restrictive measures, will affect gasoline demand and obviously change the demand outlook as it appears at present. Gasoline rationing would create a difficult situation in California and result in a severe reduction in crude-oil production or a cut in crude-oil prices as gasoline would become a waste product. The present conservation program in California is based on the ability of fields to produce a crude that will yield maximum of refined products based on market demand. It is for this reason that fields producing heavy

(Continued on Page 124)

CALIFORNIA

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Aliso Canyon	3	0	0	2	1
Antelope Plains	2	1	937	1	0
Arvin	1	1	80	0	0
Belridge, North	3	3	1,424	0	0
Belridge, South	10	10	522	0	0
Bowerbank gas field	2	0	0	1	1
Buena Park	1	1	90	0	0
Canal	1	1	498	0	0
Coalinga, East	2	1	75	0	1
Coalinga Nose	13	13	23,902	0	0
Coalinga, West	6	2	79	0	4
Coles Levee	12	11	13,718	0	1
Coyote, East	3	2	185	0	1
Coyote, West	2	2	1,687	0	0
Delano gas field	2	0	0	1	1
Del Valle	2	2	689	0	0
Dominguez	3	2	599	0	1
Dyer Creek	1	0	0	0	1
Edison	5	2	242	0	3
Elk Hills	6	4	2,397	2	0
Gato Ridge	1	1	475	0	0
Greeley	7	7	10,194	0	0
Helm	3	3	714	0	0
Huntington Beach	10	10	2,880	0	0
Inglewood	4	3	3,537	0	1
Jacalitos	4	3	414	0	1
Kern River	10	3	210	0	7
Kettleman North Dome	9	9	4,229	0	0
Long Beach	3	1	120	0	2
Marysville Buttes gas field	1	0	0	1	0
Midway-Sunset	28	18	879	0	10
Mountain View	1	0	0	0	1
Mount Poso	18	13	1,356	0	5
Newhall Potrero	2	2	1,065	0	0
Oak Canyon	2	1	470	0	1
Paloma	2	2	282	0	0
Potrero	1	1	325	0	0
Raisin City	6	3	1,198	2	1
Rincon	1	0	0	0	1
Rio Bravo	3	2	2,820	0	1
Rio Vista gas field	7	0	0	7	0
Riverdale	3	3	821	0	0
Rosecrans	4	3	542	0	1
Round Mountain	1	0	0	0	1
San Martinez	3	2	280	0	1
San Miguelito	1	1	784	0	0
Santa Maria	4	3	2,774	0	1
Santa Maria Valley	23	20	11,774	0	3
Santa Fe Springs	1	1	48	0	0
Shafter	1	1	104	0	0
Strand	1	1	656	0	0
Summerland	1	0	0	0	1
Ten Section	3	3	3,147	0	0
Torrance	9	9	1,055	0	0
Turnbull Canyon	1	1	977	0	0
Union Avenue	2	2	95	0	0
Ventura Avenue	10	9	8,737	0	1
Ventura-Newhall	18	3	365	0	15
Whittier	3	0	0	1	2
Wilmington	20	20	6,275	0	0
Wildcats	68	0	0	0	68
Total	380	222	116,726	18	140

Completions by Months

Month—	Comp.	Oil	Prod.	Gas	Dry
January	106	70	39,178	28	8
February	80	47	25,847	31	2
March	26	15	8,306	11	0
April	49	25	16,029	22	2
May	55	28	12,170	26	1
June	64	37	15,196	22	5
First half 1942	380	222	116,726	140	18

CALIFORNIA (continued)

LOS ANGELES BASIN

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Eastern Sector:											
Brea-Olinda	1,013	1,054	1,039	1,025	1,020	1,055	1,593	299	362	367	404
Coyote E	437	505	652	736	665	722	900	85	87	92	117
Coyote W	1,409	1,662	1,178	1,489	1,482	1,593	1,679	54	78	75	105
Montebello	2,924	4,528	4,103	3,137	2,655	2,240	1,885	216	335	342	340
Richfield	1,517	1,615	1,637	1,588	1,284	1,419	1,432	285	298	310	309
Santa Fe Springs	5,122	4,931	4,739	4,703	4,313	4,246	3,801	587	582	579	578
Whittier	157	165	143	37	38	132	179	148	38	154	158
Turnbull Canyon	.....	.....	.....	.....	.....	14	40	0	0	1	2
Buena Park	.....	.....	.....	.....			5	0	0	0	1
Total	12,579	14,460	13,491	12,715	11,457	11,421	11,514	1,676	1,779	1,920	2,014
Central Sector:											
Dominguez	3,774	3,352	3,714	3,853	4,099	4,407	3,476	207	200	283	266
Huntington Beach	5,117	4,853	4,869	4,624	5,074	5,681	5,290	570	574	592	629
Inglewood	2,243	2,465	2,275	2,094	2,151	2,742	3,209	208	198	207	276
Long Beach	8,747	8,249	8,145	7,850	7,563	7,149	6,668	1,261	1,216	1,200	1,162
L. A.-Salt Lake	92	88	97	99	98	100	98	109	103	98	98
Potrero	178	235	318	367	404	307	176	13	19	22	23
Rosecrans	2,545	1,924	1,788	2,469	1,887	1,586	1,398	118	170	179	183
Seal Beach	1,348	1,295	1,323	1,237	1,173	1,229	1,464	112	120	122	132
Total	24,044	22,461	22,529	22,593	22,449	23,201	21,779	2,598	2,600	2,703	2,769
Western Sector:											
El Segundo	634	533	444	844	272	256	221	56	39	36	35
Lawndale	12	7	8	7	6	5	5	6	5	3	3
Playa del Rey	942	850	777	729	674	644	636	197	146	136	128
Torrance	3,719	2,692	2,167	1,843	1,607	1,598	1,573	650	633	614	630
Wilmington	15,445	15,671	15,175	15,029	14,876	15,786	16,181	565	899	1,072	1,088
Total	20,752	19,753	18,571	17,952	17,435	18,289	18,616	1,474	1,722	1,861	1,884
Total L.A. Basin	57,375	56,674	54,591	53,260	51,341	52,911	51,909	5,748	6,101	6,484	6,667
Total California	111,657	113,834	111,222	111,882	111,723	118,594	114,455	13,843	14,876	16,515	17,927

EASTERN KANSAS (continued)

(Continued from Page 92)

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Kramer-Stern	*64*	*72*	*72*	*68*	*74*	*71*	*68*	*35*	*33*	*37*	*35*
Leon-Weaver	*17*	*16*	*15*	*15*	*15*	*14*	*14*	*30*	*26*	*26*	*28*
McCullough	38	31	31	22	20	17	26	8	8	8	9
Potwin	142	131	122	127	119	119	120	83	80	90	96
Smock-Sluss	29	28	29	30	45	36	31	42	41	43	41
Young	38	40	43	39	38	38	38	29	29	31	31
Miscellaneous	7	6	5	4	5	5	6	5	5	5	5
Total	2,609	2,583	2,495	2,615	2,555	2,652	2,453	2,697	2,613	2,593	2,557
*Formerly listed as "Leon-Weaver."											
Coffey County	13	12	10	8	9	12	9	33	35	36	28
Cowley County:											
Couch	.....	.....	4	30	60	83	87	0	9	17	19
David-Sherwood	84	79	34	56	66	66	54	17	27	30	23
Frog Hollow & E	105	110	86	91	99	140	165	9	24	37	48
Hittle	310	1,022	423	418	413	426	368	19	72	73	75
Rainbow-Gueda	242	284	179	208	187	184	168	127	129	128	125
Rock & N	87	74	71	118	107	114	93	33	40	42	41
Weathered	329	155	111	92	93	72	74	29	29	29	28
Winfield-State	122	101	107	107	101	59	86	126	117	110	105
Burder	37	32	31	28	26	25	25	36	33	32	32
Darien	.....	19	24	21	23	27	25	0	6	6	5
Eastman	27	26	25	21	24	26	24	33	33	33	39
Slick-Carson	28	29	28	33	32	31	27	18	18	16	15
Trees	38	32	29	25	21	18	18	9	10	10	10
Miscellaneous	158	158	151	128	155	129	177	109	108	129	139
Total	1,567	2,121	1,303	1,376	1,387	1,400	1,389	565	655	692	704
Elk County	135	120	109	198	182	187	191	250	281	281	258
Greenwood County:											
Atyeo-Pixley	330	290	286	331	357	385	358	464	460	457	430
Sallyards	218	188	205	196	186	108	173	534	528	526	483
Virgil & Dunaway	344	318	309	320	306	296	282	470	472	472	484
Lamont	68	57	63	65	60	65	60	108	108	108	94
Quincy	159	132	100	130	85	77	87	113	115	115	101
Winterscheid	125	122	114	117	102	117	96	225	227	227	227
Beaumont & S	(†)	(†)	40	36	72	92	157	(†)	13	19	23
Seeley-Wick	448	384	396	398	430	466	440	652	652	653	620
De Malorie-Sowder	*119*	*108*	*120*	*130*	*145*	*141*	*157*	*128*	*126*	*129*	*129*
Hamilton	*60*	*52*	*50*	*51*	*56*	*57*	*40*	*95*	*96*	*92*	*77*
Madison	*105*	*94*	*94*	*87*	*85*	*93*	*80*	*102*	*102*	*103*	*100*
Seeley-Wick	*164*	*130*	*132*	*130*	*144*	*174*	*157*	*327*	*328*	*329*	*314*
Fankhauser	24	23	25	25	21	24	23	65	66	67	50
Reece	25	23	23	23	22	22	26	21	22	27	25
Miscellaneous	164	139	137	130	122	120	152	228	191	183	186
Total	1,905	1,680	1,698	1,771	1,773	1,772	1,854	2,880	2,853	2,854	2,723
†In "miscellaneous."											
Jefferson County:											
McLouth	.....	.....	.....	.....	(‡)	(‡)	46	0	0	(‡)	10
†In "Eastern Counties."											
Marion County:											
Lost Springs	84	128	181	188	271	402	413	49	24	114	116
Miscellaneous	85	79	87	91	89	95	90	69	55	40	36
Total	169	207	268	279	360	495	503	118	119	154	150
Eastern counties:											
Neosho Falls	(†)	(†)	(†)	(†)	265	275	267	(†)	(†)	(†)	(†)
Miscellaneous	1,343	1,430	1,407	1,704	1,384	1,426	1,392	6,716	6,704	6,701	6,800
Total	1,343	1,430	1,407	1,704	1,649	1,681	1,657	6,716	6,704	6,701	6,800
Ttl. Eastern Kans.	7,741	8,153	7,285	7,943	7,915	8,199	8,102	13,259	13,270	13,311	13,230
Total Kansas	29,837	31,136	30,485	34,347	36,975	44,924	43,976	18,558	20,448	21,392	21,588

MAJOR POOL DEVELOPMENT UNDER WAY IN ANDREWS COUNTY

By ROBERT INGRAM

ANDREWS County, in the north central part of the eastern trend of development in the Permian basin of West Texas, had several discoveries during the first part of 1942. One group of new pools, in the southwestern part of the county, was given enough outpost drilling to substantiate the probability that they will be eventually joined into a single producing area comparable in size to Slaughter, Goldsmith, Wasson and other big Permian basin fields.

This group lies south of the West Andrews field, an early 1941 discovery, and includes the Embar field some 6 miles to the southeast, the so-called Mascho pool, about the same distance east, and may possibly join with the West Fuhrman area still farther north and east.

Both the Mascho pool, opened by the Mascho Oil Co. 1 Sun-University, Section 27, Block 10, University Lands, and the Embar pool, opened by Phillips Petroleum Co., were 1942 discoveries, and the West Fuhrman area was opened late in 1941. All were on lands of the state university which had been leased with the requirement that production be developed within a 3-year period, and the end of that period coming at midyear forced an unusually widespread exploratory campaign.

Major Field in Andrews County

Chief development in this group of pools was centered around Phillips' Embar discovery, not only because of the lease situation which caused Phillips to start 15 additional wells, but also because the discovery well, in Section 30, Block 10, proved production in both Permian and Ordovician pays. The discovery was completed in the Ellenburger (Ordovician), and two other outposts were started for this zone. The others, however, were carried to the Permian.

Another good discovery was the Fullerton area in northwestern Andrews County, opened in February by Fullerton Oil Co. 1 H. M. Wilson, some 7 miles northwest of Shafter Lake. By midyear three other wells had been completed to prove about 640 acres to production from the Clear Fork lime at below 7,000 ft., and development was expected to continue at a steady rate.

These discoveries, the development of the new Fuhrman area in Andrews County and continued drilling at the big Slaughter pool in Cochran, Hockley and Terry counties and at Wasson in Yoakum County, accounted for most of the drilling in the northern part of the basin. However, drilling on proven acreage at both Slaughter and Wasson was cut down sharply by the market difficulties, and completions at Slaughter dropped from 71 in January to 22 in June, at Wasson from 14 to 7 in the same period.

Perhaps the most important discovery of the 6-month period, however, was the opening of production from a Cambrian sand below the Ellenburger at the Wentz field in north central Pecos County. Importance of this find lay largely in the fact that it was the first pay from that section in West Texas. Not only in West Texas is Cambrian production new, but throughout the country Cambrian horizons are rarely explored and this find, offsetting Ellenburger production discovered a few months earlier, opened an entirely new zone for exploration not only in the

PRODUCTION 1939-1942

(In thousands of barrels)

WEST TEXAS

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Big Lake district:											
Big Lake	1,185	1,181	1,089	1,046	1,017	992	1,003	5	5	199	200
Todd	.....	.....	7	16	42	63	42	0	5	13	14
World	176	170	209	200	235	272	295	42	50	64	66
Miscellaneous	21	18	20	16	15	2	11	5	7	6	6
Total	1,382	1,369	1,318	1,262	1,309	1,332	1,351	249	271	282	286
Cowden district:											
Cowden, N.	1,466	1,690	2,026	1,543	2,237	3,099	1,984	241	414	502	533
Cowden, S.	44	36	91	202	408	457	397	15	70	109	115
Emma	129	154	131	116	147	213	184	11	37	55	64
Foster	1,379	1,524	1,976	1,487	1,942	2,069	1,444	225	509	566	579
Johnson	11	15	59	154	315	550	443	4	55	112	125
Total	3,029	3,419	4,283	3,502	5,050	6,388	4,452	496	1,085	1,344	1,416
Fuhrman district:											
Deep Rock	36	30	29	20	26	28	19	9	10	10	10
Fuhrman	281	281	266	251	227	250	155	40	55	55	55
Fuhrman, W.	.....	.....	.....	.....	1	4	28	0	0	1	3
Parker	5	4	6	5	5	5	5	2	2	2	2
Total	322	315	301	276	259	287	207	51	67	68	70
Goldsmith district:											
Andrews, W.	.....	.....	.....	4	8	10	13	0	3	6	7
Goldsmith	4,328	3,271	4,333	3,577	3,981	4,202	3,547	617	902	953	968
Goldsmith, N.	.....	.....	.....	12	29	20	18	0	5	10	10
Harper	1,219	763	722	514	545	481	279	177	184	184	184
Embar	.....	.....	.....	.....	.....	.....	12	0	0	0	1
Total	5,547	4,034	5,055	4,107	4,563	4,713	3,869	794	1,094	1,153	1,170
Hendrick district:											
Eaves	53	50	42	80	80	79	78	7	7	7	7
Emperor	199	284	305	208	281	314	247	73	98	118	116
Halley	75	62	51	47	67	51	44	24	26	23	25
Henderson	475	403	459	589	436	440	388	125	139	139	138
Hendrick	1,794	1,695	1,460	1,483	1,448	1,371	1,282	367	334	296	300
Kermit	2,671	2,251	1,826	1,352	1,496	1,387	1,038	892	861	841	822
Keystone	615	775	891	776	776	965	911	139	240	320	356
Leck	50	57	82	83	92	108	94	8	9	9	9
Scarborough	339	267	325	216	299	321	221	133	133	135	130
Weiner	.....	.....	.....	.....	.....	.....	35	0	0	0	8
Total	6,271	5,824	5,441	4,834	4,975	5,036	4,338	1,768	1,847	1,888	1,921
Howard-Glasscock:											
Carter	6	4	3	3	3	2	2	2	1	1	1
Chalk-Settles	2,589	2,692	2,635	2,328	2,407	2,328	2,391	826	856	827	823
Total	2,595	2,696	2,638	2,331	2,410	2,330	2,401	828	857	828	824
Iatan district:											
Iatan	943	955	905	799	732	710	726	251	279	288	303
Snyder	394	385	282	216	192	164	147	70	94	97	98
Total	1,337	1,340	1,187	1,015	924	874	873	321	373	385	401
McCamey district:											
Cowden-Crane	217	176	169	143	127	119	101	108	116	107	100
McCamey	2,504	2,294	2,185	1,806	1,743	1,761	1,387	847	874	847	849
Miscellaneous	40	28	28	23	20	18	14	24	20	17	16
Total	2,761	2,498	2,382	1,972	1,890	1,898	1,502	979	1,010	971	965
Pecos Valley district:											
Abell-Ordovician	.....	.....	.....	6	33	172	380	0	1	47	85
Apco	3	19	24	18	35	53	52	0	8	11	18
Lehn	.....	18	63	69	69	64	56	0	36	49	40
Masterson	52	38	33	32	28	30	25	23	24	24	24
Payton	459	649	417	259	274	197	158	67	143	143	128
Pecos Valley	246	239	243	457	231	193	160	128	185	179	178
Shearer	217	260	149	150	103	101	85	14	43	47	46
Miscellaneous	30	34	36	33	37	32	28	21	33	35	35
Total	1,007	1,257	965	1,024	810	842	944	253	473	535	560
Jordan-Waddell district:											
Dune	61	89	77	48	80	91	68	6	10	25	23
Edwards	1	1	1	1	1	2	2	1	1	1	1
Jordan	462	584	655	623	708	778	613	97	189	219	225
Penwell	648	684	643	484	721	744	540	167	174	175	171
Waddell	194	263	331	284	247	267	254	42	67	75	81
Ella Waddell	.....	.....	.....	3	7	13	15	0	1	4	5
Total	1,366	1,601	1,707	1,443	1,764	1,805	1,492	313	442	499	506
Slaughter district:											
Dean	10	13	11	8	6	7	7	1	3	3	1
Slaughter	223	440	580	584	1,222	3,573	3,961	23	144	770	1,084
Total	233	453	591	592	1,228	3,580	3,968	24	147	773	1,085
North Ward district:											
Magnolia-Sealy	99	150	125	103	165	157	113	23	54	55	53
Magnolia-Sealy, S.	.....	.....	.....	6	23	57	68	0	2	15	15
North Ward	950	1,067	1,187	940	1,148	1,241	1,090	284	353	417	422
Spencer	.....	.....	.....	.....	.....	.....	16	0	0	0	6
Total	1,049	1,217	1,312	1,049	1,336	1,455	1,287	307	409	487	496
South Ward district:											
Dobbs	1	1	1	1	8	1	1	1	1	1	1
Estes	1,121	1,259	1,360	1,121	972	971	782	302	342	352	345
Shipley	238	217	274	201	273	333	220	96	113	124	123
South Ward	1,292	1,143	927	768	675	642	485	683	665	603	571
Total	2,652	2,620	2,562	2,091	1,928	1,947	1,488	1,082	1,121	1,080	1,040
Yates district:											
Crockett	27	60	56	41	39	38	42	9	27	34	37

(Continued on next page)

Permian basin but in many other parts of the Mid-Continent.

So far only two wells have been completed at Wentz, both drilled by Gulf Oil Corp. and Lew Wentz on the Millar ranch, and both have had relatively small initial potentials—163 bbl. for the Ellenburger well and 165 bbl. for the Cambrian sand well.

Search for Ellenburger production in the entire basin continued with success, and at the same time that deep pay was found at Embar in Andrews County, Shell Oil Co., Inc., opened the first Ordovician pool in Ward County at 1 Sealy-

(Continued on Page 107)

NORTHERN WEST TEXAS DISTRICT

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Bieg-Wright*	1	1	450	0	0
Cedar Lake	13	13	6,624	0	0
Dodge Denman	2	2	383	0	0
Emma	10	10	5,390	0	0
Fuhrman*	4	4	646	0	0
Fullerton*	4	4	2,764	0	0
Iatan	12	12	2,648	0	0
Mascho*	1	1	178	0	0
M-Bar*	1	1	1,421	0	0
Seminole	9	9	5,386	0	0
Sharon Ridge	11	10	1,823	0	1
Slaughter	313	312	336,032	0	1
Wasson	51	51	30,303	0	0
Welch*	1	1	181	0	0
West Andrews	4	4	1,726	0	0
Wildcats	26	0	0	0	26
Total	463	435	395,955	0	28

*Discovery.

Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	113	105	0	8	546,680
February	79	74	0	5	382,192
March	90	84	0	6	449,190
April	69	66	0	3	331,703
May	68	65	0	3	338,397
June	44	41	0	3	203,137
Total 6 months	463	435	0	28	2,251,299

SOUTHERN WEST TEXAS DISTRICT

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Abell	36	29	27,383	2	5
Abell Permian	8	6	1,880	0	2
Apco-Warner	8	7	6,538	0	1
Barnhart	4	4	1,679	0	0
Bean	1	0	0	0	1
Big Lake*	1	1	3,423	0	0
Byrd*	2	1	29	0	1
Chancellor*	1	1	62	0	0
Clara Couch	8	2	260	1	5
Crockett	3	3	217	0	0
Dune	2	2	440	0	0
Embar	1	1	84	0	0
Emperor	7	7	2,814	0	0
Estes	6	6	4,855	0	0
Foster	15	12	22,647	0	3
Fromme	2	1	90	0	1
Goldsmith	14	14	17,248	0	0
Halley	1	1	579	0	0
Harper	2	1	418	0	1
Hendrick	3	3	1,172	0	0
Hoover	4	0	0	0	4
Johnson	13	10	7,302	0	3
Kermit	6	4	1,169	1	1
Keystone Colby	38	38	9,262	0	0
Keystone lime	3	3	1,199	0	0
Lehn	5	2	338	0	3
McCamey	3	3	308	0	0
McElroy	10	10	6,051	0	0
Millar*	1	1	165	0	0
Nichols*	1	1	49	0	0
Noelke	3	1	340	2	0
North Cowden	23	23	15,078	0	0
North Ward	5	5	3,104	0	0
Oil Well-Johnson*	1	1	20	0	0
Pecos Valley	1	1	68	0	0
Pyote*	1	1	888	0	0
Sand Hills Ordovician	6	6	42,294	0	0
Sand Hills	15	14	8,442	1	0
Scarborough	2	2	226	0	0
Shearer	1	1	146	0	0
Shipley	3	3	739	0	0
South Cowden	1	1	192	0	0
Spencer	2	1	258	1	0
Taylor Link	7	6	856	0	1
Toborg	3	3	60	0	0
Todd Deep	3	1	386	0	2
Waddell	9	9	45,337	0	0
Walker	10	5	877	0	5
Weiner	4	5	595	1	0
White & Baker	4	2	168	0	2
World	6	4	486	0	2
Wildcats	33	0	0	0	33
Total	352	267	238,221	9	76

*Discovery.

Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	76	64	2	10	265,451
February	69	60	0	9	240,102
March	58	46	1	11	232,809
April	53	34	4	15	207,022
May	61	41	1	19	241,015
June	35	22	1	12	133,832
Total 6 months	352	267	9	76	1,320,231

WEST TEXAS (Continued)

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Noelke	.....	.....	7	9	27	69	53	0	3	27	25
Tobarg	302	312	294	262	265	275	238	201	231	252	254
White & Baker	5	27	28	31	31	30	39	3	14	18	18
Yates	3,787	3,141	3,930	3,026	2,850	3,040	2,947	575	568	582	582
Total	4,121	3,540	4,315	3,369	3,212	3,461	3,319	788	843	913	916
Wasson district:											
Wasson	2,391	3,525	5,670	5,369	5,961	7,159	5,264	230	1,032	1,300	1,346
Ownby	.....	.....	.....	.....	6	18	20	0	0	4	5
Miscellaneous	6	11	13	12	11	16	12	1	3	3	3
Total	2,397	3,536	5,683	5,381	5,972	7,175	5,296	231	1,035	1,307	1,354
Other fields:											
Cedar Lake	.....	1	20	26	60	144	154	0	11	31	43
Mason	44	46	46	33	32	29	28	8	10	9	9
McElroy	1,701	1,902	2,531	2,565	2,242	2,577	2,305	460	532	579	589
Means	494	450	451	376	599	696	478	76	118	122	121
Sand Hills	246	324	384	401	445	748	698	56	82	149	164
Seminole	83	94	301	687	1,097	1,519	950	12	160	280	288
Sharon Ridge	14	58	120	157	187	231	211	10	95	160	166
Taylor Link	249	298	306	311	325	477	316	69	92	109	116
Westbrook	127	109	130	131	123	117	111	96	96	88	87
Wheat	216	195	189	207	206	194	172	83	91	89	85
Barnhart	.....	.....	.....	.....	.....	.....	50	0	0	5	5
Fullerton	.....	.....	.....	.....	.....	.....	49	0	0	4	4
Walker	.....	.....	0	2	10	44	113	0	2	39	50
Miscellaneous	19	25	23	29	39	57	106	24	27	37	48
Total	3,193	3,502	4,503	4,933	5,399	6,789	5,741	894	1,316	1,653	1,725
Total W. Texas	39,262	39,221	44,243	39,181	43,029	49,902	42,528	9,378	12,390	14,166	14,755

PRODUCTION 1939-1942

(In thousands of barrels)

NEW MEXICO

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Eunice-Monument:											
Arrowhead	(*)	(*)	330	586	666	763	554	(*)	92	101	105
Eunice	4,193	3,730	3,476	3,984	3,236	3,422	2,550	486	489	491	493
Monument	4,390	3,816	3,625	3,062	3,342	3,618	2,741	478	493	497	499
South Eunice	617	710	512	427	468	512	321	67	73	75	75
Total	9,200	8,256	7,943	8,059	7,712	8,315	6,166	1,028	1,147	1,164	1,172
Penrose-Hardy:											
Hardy	549	546	576	523	429	354	292	75	120	120	120
Penrose	929	766	834	773	689	523	459	133	186	190	191
Skaggs	18	14	11	13	12	12	11	0	3	3	3
Skelly	292	378	322	272	274	267	210	45	72	81	82
Total	1,788	1,704	1,743	1,581	1,404	1,156	972	253	381	394	396
Cooper-Lynn:											
Cooper	769	640	619	533	522	515	375	101	87	87	88
Eaves	155	143	137	116	131	160	111	22	19	23	23
Jal	125	100	89	75	64	64	51	28	20	18	19
Lynn	140	141	149	150	169	179	132	20	27	29	30
Rhodes	21	14	23	34	62	82	58	6	10	15	16
Total	1,210	1,038	1,017	908	948	1,000	627	177	163	172	176
Langlie-Mattix:											
Langlie	911	871	842	745	716	648	508	98	124	125	125
Mattix	694	815	882	805	752	649	497	77	150	156	156
Total	1,605	1,686	1,724	1,550	1,468	1,297	1,005	175	274	281	281
Grayburg-Loco Hills:											
Grayburg-Jackson	762	897	745	1,028	768	859	722	107	116	176	200
Leonard	62	99	147	161	134	170	127	17	45	46	50
Loco Hills	19	358	1,004	955	1,096	1,212	771	0	142	181	187
Total	843	1,354	1,896	2,144	1,998	2,241	1,620	124	303	403	437
Artesia-Red Lakes:											
Artesia	91	83	79	79	69	86	106	161	157	180	174
Red Lakes	43	56	56	44	60	82	67	5	21	63	64
Total	134	139	135	123	129	168	173	166	178	243	238
Shugart:											
Leo	.....	.....	.....	7	8	10	11	0	0	6	7
Shugart	38	51	86	83	105	98	90	11	23	29	32
Total	38	51	86	90	113	108	101	11	23	35	39
Getty-Barber	16	16	3	19	25	142	158	9	10	11	23
Halfway	.....	.....	26	42	48	64	40	0	6	9	9
High Lonesome	.....	.....	5	4	3	9	60	0	6	7	35
Hobbs	2,402	1,998	2,051	1,732	1,743	1,943	1,447	252	252	257	253
Lynch & N.	102	92	90	74	84	76	50	13	12	13	12
Maljamar & S.	273	227	320	440	703	948	827	19	86	147	168
Robinson-N. Maljamar	63	68	51	40	31	26	31	13	14	14	19
Salt Lake	.....	.....	.....	.....	.....	19	27	0	0	5	7
South Lovington	39	152	250	228	247	277	220	0	34	40	41
Vacuum	1,267	1,761	2,478	2,259	2,352	2,448	1,588	129	328	341	344
West Eunice	18	15	40	50	72	94	66	2	9	15	18
Miscellaneous	.....	.....	4	10	26	21	26	0	9	14	17
Total S.E. N. Mex.	18,998	18,571	19,882	19,353	19,106	20,352	15,204	2,371	3,235	3,565	3,685
Northwest N. Mexico:											
Aztec	1	0	0	1	.....	.....	.....	16	16	16	16
Hogback	36	33	36	37	37	36	34	7	10	11	12
Rattlesnake	99	105	68	75	58	39	33	38	36	36	36
Table Mesa	14	15	16	20	17	19	17	6	7	7	7
Total	150	153	120	133	112	94	84	67	69	70	71
Total New Mexico	19,148	18,724	20,002	19,486	19,218	20,338	15,288	2,438	3,304	3,635	3,756

PRODUCTION 1939-1942

(In thousands of barrels)

TEXAS PANHANDLE

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Carson County	1,221	1,238	1,386	1,655	1,764	1,932	2,300	446	615	690	692
Gray County	5,379	5,680	6,361	5,644	5,962	6,644	6,644	1,892	2,103	2,334	2,377
Hutchinson County	4,195	4,532	4,553	4,362	4,575	5,320	5,799	1,324	1,615	1,925	1,964
Moore County	231	216	152	87	80	81	90	24	16	15	15
Wheeler County	1,072	1,205	999	809	812	778	660	350	372	411	413
Total	12,098	12,571	13,651	12,457	13,193	14,755	15,683	4,036	4,721	5,375	5,461

DISCOVERIES INCREASE DESPITE DROP IN EXPLORATORY DRILLING

By F. L. SINGLETON

THERE were 15 new fields opened in the Southwest Texas district during the past 6 months. This exceeds the number of pools opened during the same period a year ago and this was achieved in spite of the fact that wildcatting and field development was below that of last year. There were 631 wells completed, a decrease of 231. Of this number 291 were in the Lower Gulf Coast district, 277 in the Laredo district and 41 in the South Central Texas district.

Of the new discoveries, eight were in the lower Gulf Coast. These included Medio Creek, Holzmark and South Caesar, Bee County; Koopman and Quinto, Jim Wells County; Rooke, Refugio County; South Sinton, San Patricio County; and Yorktown, De Witt County. Those in the Laredo district were Alamo and Pentas, Hidalgo County, Frost, Garcia and North Sun, Starr County, North Moca and McLean in Webb County. Only one field was opened in South Central Texas, this being a shallow Wilcox sand discovery which will have much bearing on future exploration.

Probably the outstanding development during this period was the expansion of Wilcox sand development along the old Jackson shore line trend. While the possibilities of Wilcox sand production along this particular sector of the trend have been known for sometime development has been slow and the results had been

LOWER GULF COAST DISTRICT

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Agua Dulce	37	32	4,682	2	3
Armagosa	1	0	0	1	0
Ben Bolt	12	6	1,184	1	5
Clara Driscoll	2	2	200	0	0
Coleto Creek	1	0	0	1	0
Cologne	2	2	122	0	0
Coloma Creek	1	0	0	0	1
East Heard	1	0	0	1	0
East Flour Bluff	1	0	0	0	1
East Placedo	9	9	1,028	0	0
Fagan	4	3	265	0	1
Flour Bluff	1	0	0	1	0
Greta	4	3	234	0	1
Heard	1	0	0	0	1
Henshaw	1	1	25	0	0
Kingsville	1	1	50	0	0
Koopman	1	1	50	0	0
La Gloria	4	3	753	0	1
McAllen	1	0	0	1	0
McFaddin	6	3	396	0	3
Minnie Bock	5	3	114	1	1
Midway	8	5	522	0	3
North Rincon	1	0	0	1	0
North Keeran	1	0	0	0	1
Odem	26	21	2,226	2	3
Orange Grove	5	4	376	0	1
Petronilla	3	1	155	0	2
Placedo	1	1	132	0	0
Plymouth	3	3	438	0	0
Premont	1	0	0	0	1
Refugio	7	6	596	0	1
Richard King	7	7	527	0	0
Seeligson	25	24	3,109	0	1
South La Rosa (Rooke)	1	1	357	0	0
South Caesar	4	2	234	0	2
South Sinton	1	1	66	0	0
Southeast Orange Grove	1	0	0	1	0
Stratton	41	35	4,245	6	0
St. Charles	1	1	63	0	0
Victoria	1	1	48	0	0
Wade City	1	1	192	0	0
West Alfred	1	0	0	0	1
West Tuleta	1	0	0	0	1
Willamar	1	1	86	0	0
Yorktown	1	1	144	0	0
Miscellaneous	52	0	0	0	52
Total	291	185	22,619	19	87

Completions by Months

Month—	Comp.	Oil	Prod.	Gas	Dry
January	69	50	6,645	3	16
February	47	34	4,081	2	11
March	39	24	2,986	4	11
April	72	40	4,602	9	23
May	35	23	2,555	0	12
June	29	14	1,750	1	14
First half 1942	291	185	22,619	19	87
First half 1941	336	238	32,375	14	84
Difference	45	53	9,756	5	3

PRODUCTION 1939-1942

(In thousands of barrels)

LOWER GULF COAST

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Aransas County:											
McCampbell	1,504	1,473	1,799	1,249	1,065	956	533	161	257	257	205
St. Charles					1	16	7	0	1	3	1
Total	1,504	1,473	1,799	1,249	1,066	972	540	161	258	260	206
Bee County:											
Caesar	34	24	22	22	17	16	32	21	18	18	18
Dirks	339	258	283	233	214	215	118	95	92	93	89
Pettus & N	288	221	237	178	171	166	107	104	93	94	90
Ray	42	29	34	24	27	33	22	17	11	11	12
Tuleta	46	35	32	27	20	20	16	21	19	19	17
Miscellaneous	61	47	33	27	27	21	4	25	21	23	17
Total	810	614	641	511	476	471	299	293	255	258	243
Calhoun County:											
Jay Welder				8	17	21	19	0	2	4	4
Heyser	1,798	1,672	1,858	1,521	1,299	1,303	1,337	206	261	262	247
Miscellaneous	2				9	10	9	5	0	2	2
Total	1,800	1,672	1,858	1,529	1,325	1,334	1,365	211	263	268	253
De Witt County:											
Thomaston						5	1	0	0	1	1
Goliad County:											
Miscellaneous	5	5	6	7	15	20	10	3	5	7	4
Hidalgo County:											
Miscellaneous	28	24	71	67	3	0	0	7	7	7	0
Karnes County:											
South Burnell	130	10	101	81	63	57	32	31	32	31	25
Kleberg County:											
Miscellaneous	11	12	10	25	16	13	11	10	10	11	3
Jim Wells County:											
Alfred	16	39	42	72	73	94	68	2	20	24	22
Alice	545	379	706	387	493	476	267	57	56	92	43
Ben Bolt	4	124	399	340	383	299	249	0	51	64	66
La Gloria		6	9	5	9	6	27	0	4	3	2
Orange Grove			6	185	182	201	240	0	19	31	34
Premont	68	60	72	66	36	24	20	31	45	26	20
Reynolds	1	156	294	183	211	238	113	0	31	31	26
Seeligson	27	32	75	51	39	168	176	4	5	26	50
Wade City			68	580	557	555	571	0	75	96	96
Miscellaneous	7	14	69	65	37	63	42	0	10	14	13
Total	668	870	1,727	1,934	1,970	2,124	1,773	94	316	407	420
Live Oak County:											
Oakville	32	57	97	119	134	111	136	6	17	21	28
White Creek	7	24	45	47	64	70	45	0	25	33	31
White Creek South						9	24	0	0	3	5
Miscellaneous	23	19	23	21	20	13	11	10	13	7	7
Total	62	100	165	188	218	203	216	16	55	64	71
Nueces County:											
Agua Dulce-Stratton	101	115	113	88	334	817	803	12	22	188	225
Bentonville-King	136	181	228	173	237	225	295	6	42	74	76
Clara Driscoll & S	520	444	461	520	570	602	456	59	118	142	125
Flour Bluff	752	613	590	518	530	574	287	109	107	107	93
Flour Bluff East			1	42	84	137	80	0	10	22	20
Luby & N	1,280	1,182	943	506	621	795	599	105	148	152	150
Minnie Bock	4	115	188	191	247	233	346	0	38	66	63
Petronilla						9	19	0	0	3	4
Saxet & S	4,578	3,216	3,103	2,231	2,128	2,084	1,478	585	512	458	378
Saxet Heights	267	195	138	86	44	50	56	127	40	40	10
Shield	5	8		15	28	56	47	0	3	11	9
Turkey Creek	675	622	572	362	322	290	290	56	60	60	55
Miscellaneous	20	33	34	30	34	49	40	2	7	9	9
Total	8,338	6,724	6,371	4,762	5,179	5,921	4,796	1,061	1,107	1,332	1,217
Refugio County:											
Fagan			9	12	31	96	39	0	2	2	4
Greta	1,100	835	723	752	1,097	1,233	836	208	201	195	196
La Rosa	344	617	813	468	453	466	346	19	77	85	84
Mellon Creek	47	81	71	59	69	69	59	0	10	10	10
Refugio and Foy	900	906	1,084	875	823	985	791	155	144	161	158
Tom O'Connor	2,353	1,950	3,218	2,603	2,758	2,817	2,675	367	427	445	449
Miscellaneous					18	46	36	0	4	7	8
Total	4,744	4,389	5,918	4,769	5,250	5,712	4,782	749	865	923	909
San Patricio County:											
Midway	135	130	142	204	243	386	414	12	19	47	50
Odem						44	136	0	0	12	30
Plymouth	2,230	2,025	1,708	1,031	1,077	1,194	1,176	167	179	185	185
Taft	390	674	519	407	297	311	209	69	69	70	69
White Point East	751	1,339	1,668	1,306	1,366	1,503	1,270	38	224	242	239
Miscellaneous	8	6	9	13	10	11	2	2	5	4	2
Total	3,514	4,174	4,046	2,961	2,993	3,449	3,202	289	497	560	575
Victoria County:											
Coletto Creek	75	51	59	51	85	134	95	20	24	36	32
Cologne		1	1	4	7	28	33	0	1	7	8
Keeran & N	121	130	140	109	78	93	75	16	22	28	25
McFaddin & N	405	376	388	424	343	368	349	30	63	72	92
Placedo	1,173	975	917	812	643	688	513	154	158	161	160
Placedo East	77	54	78	64	51	55	69	8	14	17	22
Victoria			27	64	56	55	57	0	8	15	17
Miscellaneous	5	1		12	5	12	5	2	5	3	4
Total	1,856	1,588	1,610	1,540	1,268	1,433	1,196	230	295	339	360
Willacy County:											
Willamar				2	19	26	25	0	1	5	7
Total*	23,482	21,761	24,346	20,132	19,870	21,740	18,248	3,152	3,964	4,460	4,294

more or less discouraging. The trend is now receiving its greatest period of exploration which has been enhanced by recent developments. Of particular importance was the opening of the first oil production from the Carrizo sand at the South Caesar field, Bee County. Production was originally opened at 6,552-57 ft., and this was followed by an extension and new sand discovery at 6,611-55 ft. Both sands are more than 50 ft. in thickness and while production was recently defined to the south and west, the field is generally recognized as one of the outstanding discoveries of the year and is scheduled to receive considerable development due to the diversified ownership.

Updip Wilcox Sector

Following the completion of the above well, interest in the trend was heightened with the opening of the Yorktown field, De Witt County, a gas-distillate producer which topped the Wilcox formation at 7,070 ft., and was completed in sand at 7,192-7,204 ft. Thus far development has been limited to the one well. At the end of June, another Wilcox sand discovery was indicated 11 miles southwest of the town of Yorktown where Tide Water Associated Oil Co. et al 1 Gips was showing for a gas-distillate producer while testing sand at 8,300 ft.

While the downdip sector of the trend has received the major share of development widespread interest is also being shown the updip sector. This has resulted from the expansion of production in the Washburn field, La Salle County, the first Wilcox sand production in the Laredo district, and the recent opening of Wilcox sand production in the Poth area, Wilson County. By the latter discovery the scope of the Wilcox play has been extended into a portion of the old Balcones fault line district which heretofore had thought to be too far updip for this type of production.

After more than 18 months of a widespread drilling program, drilling operations around the huge Agua Dulce-Stratton field are being gradually curtailed. This does not mean the limits of production have been reached, but the slackening up is said to be due to general conditions plus the restriction of one well to 40 acres. All production developed to date has been from downdip sands flanking the gas cap, and these sands are so irregular that limiting drilling to 40 acres has proven to be extremely hazardous. Development during the first 6 months saw production extended southward into Kleberg County and westward into Jim Wells County. The extent of this field is far from being reached although development hereafter is expected to be on a smaller scale.

A concentrated drilling program in the Seeligson field, Jim Wells County, has added several million barrels in new reserves. The field was extended 4,500 ft. to the southwest by the completion of Shell 1 Seeligson, while to the east Humble Oil & Refining Co. extended production 3,900 ft. in Kleberg County, and added a new sand for the structure. The well, located on the large King ranch, cored approximately 40 ft. of sand at intervals from 6,400-84 ft., and drill-stem testing recovered several hundred feet of oil. However, the well was drilled ahead and was completed in the 5,900-6,000-ft. sand. Seeligson is now recognized as the largest oil reserve in the district due to the multiplicity of sands which extend over the structure at uniform depths.

Semiwildcatting around proven fields in Jim Wells County was responsible for two new pools and new sand discoveries. The new fields are in the early stages of development and their potentiality cannot be determined at this time. Pro-

SOUTH TEXAS

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Alamo	1	1	168	0	0
Alworth	1	0	0	0	1
Aviator	3	0	0	0	3
Adami	2	0	0	0	2
Blas Urbia	1	0	0	0	1
Boyle	1	1	66	0	0
Casa Blanca	3	2	161	0	1
Colorado	38	33	3,826	1	4
Cuellar	1	0	0	0	1
Driscoll	5	4	735	0	1
East Benavides	1	0	0	1	0
East Cole	4	3	51	0	1
Garcia	3	3	362	0	0
Government Wells	4	2	143	0	2
Glen	2	1	204	0	1
Hoffman	10	8	446	0	2
Holbein	1	0	0	0	1
Hordes Creek	1	0	0	1	0
Jacobs	1	0	0	0	1
Killam	1	0	0	1	0
Kreis	4	1	30	0	3
La Reforma	1	0	0	0	1
Las Animas	2	2	40	0	0
Margo	2	0	0	0	2
McLean	6	4	803	0	2
Neuhaus	2	1	75	0	1
Nichols	2	1	85	0	1
North Moca	1	1	15	0	0
North Rincon	1	0	0	1	0
North Sun	4	2	245	0	2
Olton	1	0	0	0	1
Oakville	5	4	226	0	1
Pentas	1	1	12	0	0
Piedra de Lumbre	3	1	12	0	2
Peters	2	0	0	1	1
Rancho Solo	1	1	70	0	0
Rincon	17	17	2,842	0	0
Sejita	3	1	590	2	0
South White Creek	5	1	27	0	4
Seven Sisters	2	1	33	0	1
Seven Sisters, South	2	2	61	0	0
Sun	16	10	922	0	6
South Campana	3	3	329	0	0
White Creek	1	0	0	0	1
Washburn	7	4	1,484	0	3
Yturria	9	6	642	0	3
South Rincon	1	1	32	0	0
Yzaguirre	1	0	0	0	1
Miscellaneous	88	0	0	0	88
Total	277	123	14,737	8	146

Completions by Months

Month—	Comp.	Oil	Prod.	Gas	Dry
January	74	28	3,105	7	39
February	35	20	2,974	0	15
March	48	27	3,676	1	20
April	55	18	2,148	0	37
May	35	15	1,625	0	20
June	30	15	1,209	0	15
First half 1942	277	123	14,737	8	146
First half 1941	422	217	23,278	27	178
Difference	145	94	8,541	19	32

PRODUCTION 1939-1942

(In thousands of barrels)

SOUTH TEXAS

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Brooks County:											
Alta Mesa	82	62	136	124	104	71	137	21	22	34	33
Miscellaneous	1	1	.....	.....	.....	1	0	2	5	5	0
Total	83	63	136	124	104	72	137	23	27	39	33
Duval County:											
Benavides	1,078	1,117	1,184	756	776	787	433	243	246	226	221
Bridwell	.....	.....	.....	12	27	35	20	0	4	10	10
Casa Blanca & N	94	88	76	67	84	107	88	22	35	66	68
Cedro Hill	14	39	65	128	133	143	106	1	72	68	77
Charamousca	72	68	74	62	89	97	69	19	19	34	34
Colmena	45	37	30	35	36	43	29	25	26	24	23
Driscoll	326	276	403	454	385	509	509	29	54	69	70
Eagle Hill	130	109	89	112	138	124	121	51	52	51	53
Fitzsimmons	466	412	441	294	268	293	153	47	79	78	77
Government Wells	1,764	1,410	1,883	1,613	1,534	1,518	1,132	833	666	651	641
Hoffman	846	704	925	960	991	1,049	762	247	328	334	337
Kreis	.....	.....	.....	.....	1	19	25	0	0	5	7
Labbe	41	27	30	36	36	39	24	16	13	15	12
Loma Novia	1,927	1,442	1,590	1,344	1,091	1,101	831	714	670	581	572
Longhorn	135	307	369	292	226	220	162	6	46	47	42
Lundell	117	107	109	157	201	237	171	44	84	95	94
Piedre de Lumbre	205	234	310	418	361	379	279	73	117	128	129
Rancho Solo	65	77	72	59	50	45	28	14	40	34	21
Sarnosa	89	87	70	84	82	77	61	51	41	38	37
Seven Sisters	1,311	1,053	1,166	1,258	1,361	1,363	1,076	438	448	425	421
Southland	6	14	26	23	90	93	66	.....	28	29	29
Miscellaneous	120	100	118	98	96	91	62	36	51	34	34
Total	9,445	7,693	9,037	8,325	8,056	8,369	6,207	2,909	3,119	3,042	3,009
Hidalgo County:											
Nichols	.....	.....	.....	.....	.....	63	48	0	0	11	13
Jim Hogg County:											
Colorado	43	89	332	453	413	543	341	4	110	184	210
Holbein	.....	.....	.....	3	12	24	27	0	1	10	10
Kelsey	104	233	352	283	358	419	219	4	78	110	110
Manila	.....	.....	1	42	51	67	42	0	13	23	23
Randado	46	44	49	42	39	25	32	89	94	86	81
Miscellaneous	14	8	7	6	3	2	15	5	3	3	4
Total	205	374	741	829	876	1,080	676	102	299	416	438
McMullen County:											
Calliham	33	31	32	27	30	26	26	57	64	64	59
Campana & S	.....	.....	.....	.....	.....	18	26	0	0	8	10
Ezzell	620	392	250	188	164	143	109	108	142	141	128
Jacobs	80	67	66	53	66	58	39	82	69	72	71
Miscellaneous	65	50	34	24	26	23	17	15	21	22	17
Total	798	530	382	292	286	268	217	262	296	307	285
La Salle County:											
Washburn Ranch	.....	.....	.....	.....	4	.....	44	0	1	0	7
Starr County:											
Boyle	.....	.....	1	23	30	41	30	0	6	10	11
El Tanque	65	53	37	43	27	43	18	13	15	9	15
Guerra	93	66	81	78	56	49	34	13	11	13	13
Ricaby	2	14	59	78	21	18	11	2	9	9	9
Rincon	4	11	192	712	441	561	701	0	47	115	132
Rincon North	.....	.....	.....	7	28	54	32	0	3	10	10
Rio Grande City	15	11	12	10	20	20	18	17	10	18	20
Sam Fordyce & N	419	374	288	249	203	250	159	157	126	115	73
Sun	74	78	130	151	178	252	222	6	42	70	82
Yturria	.....	.....	.....	.....	.....	.....	39	0	0	0	12
Miscellaneous	20	18	15	27	37	26	27	75	79	81	80
Total	692	625	815	1,377	1,039	1,314	1,291	283	346	450	457
Webb County:											
Adami	1	14	120	117	77	69	52	0	70	67	68
Aviator	56	53	54	46	48	45	45	75	65	73	73
Bruni-O'Hern-Cole	1,149	1,051	870	757	630	365	518	298	225	217	280
Glen	.....	.....	4	106	183	218	177	0	41	68	70
Killam & N	120	93	83	59	60	109	119	70	66	91	96
Lopez	942	767	847	799	744	699	470	343	342	325	313
Mirando City	67	55	53	56	51	50	48	78	67	69	63
Moca	59	46	34	45	42	41	36	11	11	11	11
Olton	219	136	129	103	87	72	52	130	108	83	71
Volpe	1	23	66	86	88	92	65	0	29	28	28
McLean	.....	.....	.....	.....	.....	.....	33	0	0	0	4
Miscellaneous	16	11	12	11	10	8	8	24	25	21	19
Total	2,630	2,249	2,272	2,185	2,020	1,768	1,623	1,029	1,049	1,053	1,096
Zapata County:											
Comitas	128	124	128	102	90	79	66	157	145	148	147
Escobas-Jennings	343	349	412	388	369	316	237	390	387	367	345
Mirando Valley	94	136	176	116	84	65	62	23	95	78	71
Miscellaneous	22	20	17	16	12	12	9	77	69	68	31
Total	587	629	733	624	555	472	374	647	696	661	594
Total S. Texas	14,440	12,163	14,116	13,756	12,940	13,343	10,617	5,242	5,833	5,979	5,932

duction in both fields is believed to be from the Frio sand at 4,100 ft. and 4,800 ft. On the northwest side of the Ben Bolt field, reworking of two old wells by H. H. Howell, open important production from a new sand. The producers were located on the Whatley lease and production is from the Frio sand topped at 4,505 ft. Both wells were originally completed in the 5,200-5,300-ft. sand.

Field development in San Patricio County was steadied by the expansion of drilling operations in the Odem field. This field, originally opened as a gas-distillate field in 1939, received its first production the past year when development of the structure was resumed by the Seaboard Oil Co. The main sand is found at 5,200-5,300 ft., although additional sands have been found productive at intervals from 3,500-5,700 ft. The majority of this development has been done by the Seaboard Oil Co., and at a recent date 32 wells were on production and three rigs were active.

Development in the Laredo district was concentrated largely along the Frio-Vicksburg trend extending to the Rio Grande. The results were most favorable as five new pools were added to the trend. Two of these, Pentas and Alamo, Hidalgo County, were completed as gas-distillate producers and development in both fields has been limited to the discovery wells. Sun Oil Co., the most active company in this play, was responsible for three new pools, and while development has been limited they are considered as important addition to the growing list of fields that have been opened along this trend during the past few years.

SOUTH CENTRAL TEXAS DISTRICT

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Bee Creek	5	3	56	0	2
Buchanan	1	1	11	0	0
Carrizo	1	0	0	0	1
Carroll	1	0	0	0	1
Chicon Lake	7	5	17	1	1
Chittim	1	0	0	0	1
Dale	2	0	0	0	2
Elgin	1	0	0	0	1
Floresville	4	0	0	0	4
Gas Ridge	7	3	6	0	4
Kimbro	2	0	0	0	2
Lentz	2	0	0	0	2
Pearsall	1	1	76	0	0
Pendencia Creek	2	0	0	1	1
Rockdale	1	1	20	0	0
South Dale	1	0	0	0	1
Sisterdale	1	0	0	0	1
Miscellaneous	23	0	0	0	23
Total	63	14	186	2	47

Completions by Months

Month—	Comp.	Oil	Prod.	Gas	Dry
January	18	6	23	0	12
February	8	0	0	0	8
March	20	4	121	0	16
April	9	4	42	2	3
May	5	0	0	0	5
June	3	0	0	0	3
First half 1942	63	14	186	2	47
First half 1941	104	63	5,607	2	39
Difference	41	49	5,421	0	8

PERMIAN BASIN, PANHANDLE

(Continued from Page 100)

Smith Foundation, 2½ miles northeast of Monahans and 7 miles east of the O'Brien sector of the North Ward field. The nearest Ordovician production was in the Sand Hills field, 15 miles to the southeast.

Shell's discovery found the Ellenburger at below 10,000 ft. (compared with 7,750 at Embar) and, in addition to extending the Ordovician producing area, opened the deepest field in West Texas. While the initial potential of this well was 120 bbl. a day, very little information was given out on it and there were reports in June that it had made a much larger well after being deepened.

Due east of this development, drilling of four more 9,000-ft. wells in the Barnhart Ordovician pool of Reagan County established that area as a major deep field.

In addition to these new pools, 10 others opening either new areas or new sands of varying importance made the first 6 months of this year highly successful in spite of the sharp drop in drilling enforced by distance of the West Texas fields from overland marketing facilities. Fifty-nine wildcats were also drilled which failed to find any new oil and were abandoned.

Production in West Texas declined about 15 per cent during the half year because of transportation facilities. The large reserves of the area have been considerably increased by discoveries and extensions and considerable increases in production may be expected when normal conditions are resumed.

PRODUCTION 1939-1942

(In thousands of barrels)

SOUTH CENTRAL TEXAS

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Bastrop County:											
Hilbig	55	45	42	26	40	43	34	12	12	12	13
Miscellaneous	39	26	27	19	18	32	20	27	29	24	17
Total	94	71	69	45	58	75	54	39	41	26	30
Bexar County:											
Somerset	104	97	102	91	94	94	80	897	913	916	769
Miscellaneous	60	55	53	44	47	51	49	362	384	390	346
Total	164	152	155	135	141	135	129	1,259	1,294	1,306	1,115
Caldwell County:											
Buchanan	28	16	22	17	14	14	13	35	34	34	23
Dale & N & W	64	63	57	48	42	32	32	55	64	64	54
Luling-Branyon	1,579	1,448	1,355	1,394	1,133	1,076	963	777	746	740	718
Lytton Springs	53	49	53	50	49	50	48	158	152	152	144
Salt Flat & N	818	759	808	757	688	617	544	274	291	291	272
Tenney Creek	.....	.....	.....	3	23	67	66	1	1	22	24
Bee Creek	.....	.....	6	30	11	105	50	0	14	26	30
Miscellaneous	25	24	24	41	20	23	15	30	32	35	34
Total	2,567	2,359	2,325	2,340	1,980	1,984	1,731	1,330	1,334	1,366	1,299
Frio County:											
Pearsall	94	77	130	118	149	156	103	19	27	34	31
Guadalupe County:											
Darst Creek & SW	1,413	1,246	1,270	890	891	924	1,030	317	366	371	343
Miscellaneous	22	16	22	21	23	16	18	26	57	59	45
Total	1,435	1,262	1,292	911	914	940	1,048	343	423	430	388
Milam County:											
Minerva-Rockdale	36	35	38	38	46	40	38	418	397	401	417
Williamson County:											
Chapman-Abbott	38	36	35	31	36	33	31	70	70	71	71
Miscellaneous	22	20	32	29	24	26	20	56	60	59	60
Total	60	56	67	60	60	59	51	126	130	130	131
Miscellaneous counties	11	11	16	15	16	23	12	54	78	94	94
Total	4,461	4,023	4,092	3,660	3,364	3,412	3,166	3,588	3,745	3,797	3,508

TEXAS PANHANDLE DISTRICT

Normal activity continued in the Panhandle which is one of the few areas in Texas to enjoy a production increase. No new producing areas were found as there are still remaining many undrilled but proven locations. This is indicated by the fact that 98 per cent of the wells drilled in the district produced either oil or gas.

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Carson County	17	12	2,325	4	1
Gray County	69	66	12,252	2	1
Hutchinson County	88	82	12,450	5	1
Moore County	13	1	27	12	0
Potter County	1	0	0	1	0
Wheeler County	12	0	940	2	1
Total	200	170	27,994	26	4

Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	73	61	12	0	220,679
February	39	31	8	0	118,965
March	27	23	2	2	82,498
April	14	14	0	0	47,189
May	31	29	0	2	93,524
June	16	12	4	0	47,801
Total 6 months	200	170	26	4	610,655

SOUTHEAST NEW MEXICO

Prospecting continued in Southeast New Mexico despite discouraging trends in production whereby the state's production declined nearly 25 per cent from the last half of 1941. This decline was due wholly to a reduction in demand for crude caused by the practical cessation of tanker shipments from Gulf to Atlantic ports.

There was relatively little activity in the older producing section of Lea County, a few routine completions being reported but a good showing made by Mascho et al 1 Tide Water-State, in 18-12-35, has revived interest in the northern half of the county. This well opens a new producing area 7 miles west of Tatum and 18 miles east of the small Caprock pool.

The most important developments in New Mexico were in Eddy County and the adjacent parts of Lea County. The Maljamar and Square Lake areas accounted for approximately one-third of the total completions in the southeastern sector and about 40 per cent of the producers drilled.

Square Lake, formerly called North Grayburg, was opened by Sanders 1 Etz in 4-17-30 and by the end of the half year 23 wells had been completed in three sections and the pool was still growing. This pool opens the first important production north of the Maljamar trend although there were previously several producing spots, such as High Lonesome and Robinson.

To the south of the Maljamar trend and to the north of the line of production established by the Getty, Halfway and Lynch areas, East and West Lusk were placed on production during the half year in Townships 19-32 and 31. Culberson & Irwin opened up another area in 6-16-31, to the northwest of West Lusk and southwest of Shugart. This area has not yet seen enough drilling to tell whether the whole region from Halfway to Ginsburg will eventually form a single pool but development in the near future will undoubtedly show the extent to which the different pools will merge.

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Arrowhead	5	5	1,832	0	0
Barber	1	1	230	0	0
Cooper	3	2	205	1	0
Ginsburg	2	2	186	0	0
Grayburg-Jackson	5	5	924	0	0
Loco Hills	4	4	1,083	0	0
Lynn	2	0	0	1	1
Maljamar	21	19	2,093	0	2
Mattix	1	1	180	0	0
Monument	3	2	465	0	1
Red Lakes	6	2	50	0	4
Rhodes	2	1	188	1	0
Salt Lake	4	3	418	0	1
Skelly	2	1	57	1	0
South Eunice	2	1	66	0	1
Square Lake	23	22	3,803	0	1
Vacuum	2	2	303	0	0
West Eunice	3	2	450	0	1
Miscellaneous	35	17	1,886	2	16
Total	126	92	14,419	6	28

Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	24	18	0	6	61,812
February	21	14	1	6	66,693
March	20	13	3	4	73,751
April	15	11	1	3	47,915
May	32	25	1	6	101,233
June	14	11	0	3	38,747
First half 1942	126	92	6	28	390,151

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GREATER PENETRATION OF WILCOX FINDS IMPORTANT FIELDS

By F. L. SINGLETON

THE opening of the Mercy field, which looms as a major Wilcox sand discovery in San Jacinto County, and the opening of three important Frio sand discoveries in Jackson County were the highlights of development along the Texas Gulf Coast district during the first 6 months of the year. In addition to these discoveries, six other pools were found, these being located in Harris, Hardin, Tyler, Brazos, and Grimes counties. The latter two are shallow gas discoveries but they are significant as they provide an expansion of exploration along the Wilcox trend.

While only four producers have been completed on the Mercy structure, structural conditions along with wide well spacing have indicated a field of considerable size although its extent is not expected to be determined at an early date due to the large block on which the discovery was drilled. The discovery well, Shell 1 Central Coal & Coke Co., topped the Wilcox formation at 8,255 ft., and production is through perforated casing opposite sand at 8,273-79 ft. The importance of this field was recently revealed with the completion of a large producer by the Atlantic Refining Co., located about 1 mile north of the discovery well. The Wilcox was topped a few feet lower than the discovery and production can be expected to be extended several hundred feet northward.

Deepest Texas Coastal Field

Since the Wilcox play was started in 1937, operators interested in this area have continued to drill deeper and the results have been most favorable. This year has been no exception, and the area now holds the distinction of having the deepest producing well along the Texas coast. This latest strike was made in the Lake Creek field, Montgomery County, where Superior Oil Co. of California completed a large gas-distillate producer on the east side of the field at a depth of approximately 11,700 ft. This is the fourth sand in the Wilcox to be found productive. The other sands are found at 9,200 ft., 9,700 ft., and 10,300 ft., all being several hundred feet below the top of the Wilcox which is logged around 8,500-8,600 ft.

The search for Wilcox sand development in another proven Cockfield sand pool has opened the way for deeper exploration. This discovery was drilled by Jordan Drilling Co. on the I. B. Munson lease in the Livingston field, Polk County, and production was developed from 15 ft. of sand at 7,600 ft. There are now few Cockfield sand pools along the trend in which deeper exploration has not failed to open Wilcox production, and while the importance of this development was emphasized during the early stages of Wilcox development, it has not extended on a large scale to old wildcat prospects which were condemned by shallow tests. Such structures justify redrilling in light of recent operations.

Exploration along the trend is entering into a new phase as increasing development was reported for the updip sector which heretofore has been overlooked. The interest being shown this area is well founded in light of recent development and all indications point to an increasing wildcatting play. While it was along this area that the first Wilcox production was opened,

PRODUCTION 1939-1942
(In thousands of barrels)

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Austin County:											
Raccoon Bend	555	475	711	518	650	684	693	169	164	160	160
Brazoria County:											
Angleton	.....	13	107	140	122	121	75	0	8	9	9
Chenango	.....	.....	.....	.....	15	21	18	0	0	2	2
Chocolate Bayou	.....	2	10	28	43	79	94	0	3	5	6
Damon Mound	49	51	55	48	45	44	41	30	30	29	29
Danbury	87	77	51	55	75	70	95	9	11	15	15
Hastings	3,356	3,160	2,897	2,604	3,725	3,092	4,170	612	685	685	685
Lochridge	377	445	459	345	379	362	327	38	44	42	42
Manvel	1,476	1,209	1,440	1,177	963	981	821	168	178	182	177
Old Ocean	1,319	1,895	2,090	2,061	2,182	2,701	1,818	26	76	110	114
Rowan	.....	.....	.....	26	69	76	62	0	7	8	8
Sandy Point	32	14	5	14	16	20	16	7	4	4	4
West Columbia	885	1,400	1,250	1,069	1,334	1,433	987	92	121	154	156
Total	7,581	8,266	8,364	7,567	8,968	9,999	8,514	982	1,178	1,245	1,247
Chambers County:											
Anahuac	1,418	1,133	1,397	1,283	2,062	2,605	2,270	270	339	366	367
Barbers Hill	1,533	1,627	1,627	1,659	1,450	1,689	1,638	164	163	169	169
Cedar Point	116	138	234	170	139	131	119	10	17	17	17
Cotton Lake & S	323	288	332	384	403	371	359	36	59	57	57
Fig Ridge	.....	.....	.....	10	10	28	111	0	1	8	19
Oyster Bayou	.....	.....	.....	.....	.....	40	66	0	0	6	9
Red Fish Reef	.....	.....	.....	4	37	116	143	0	1	14	16
Seabreeze	51	50	50	58	61	60	52	4	11	14	14
Turtle Bay	189	169	157	105	231	267	264	31	36	38	38
Willow Slough	67	61	55	40	41	45	43	4	5	12	13
Miscellaneous	32	15	17	16	18	32	22	8	9	10	10
Total	3,729	3,481	3,869	3,729	4,452	5,384	5,065	527	641	711	729
Colorado County:											
Garwood & W	3	5	1	.....	8	36	25	0	0	5	5
Sheridan	.....	.....	.....	28	23	25	21	0	3	4	5
Total	3	5	1	28	31	61	46	0	3	9	10
Fort Bend County:											
Big Creek	98	76	66	70	72	69	55	23	27	24	24
Blue Ridge	137	134	135	139	149	186	180	54	49	57	58
Clodine	.....	.....	.....	.....	.....	32	84	0	0	7	11
Orchard	79	66	67	43	26	25	28	14	15	18	18
Sugarland	598	595	855	495	352	296	271	51	51	51	52
Thompson	1,966	2,570	1,495	1,844	2,165	2,452	2,274	207	331	356	357
Needville	.....	.....	.....	.....	.....	.....	23	0	0	0	2
Miscellaneous	.....	8	7	3	4	3	.....	0	2	2	2
Total	2,878	3,449	3,625	2,594	2,768	3,061	2,915	449	475	515	524
Galveston County:											
Alta Loma	.....	.....	.....	13	34	29	38	0	2	4	4
Caplen	10	31	52	55	75	90	90	0	10	16	17
Dickinson-Gillock	1,661	2,052	1,953	1,034	944	1,057	872	175	214	225	225
Greens Lake	2	9	5	13	19	16	10	1	5	2	2
High Island	433	392	461	495	497	496	468	63	62	62	62
Hitchcock	144	190	116	85	83	72	63	12	13	13	13
League City	73	303	413	312	302	326	285	3	27	31	31
Total	2,323	2,977	3,000	2,007	1,954	2,086	1,826	254	333	353	354
Hardin County:											
Ariola	42	43	53	69	85	84	61	10	9	11	11
Batson	379	268	244	216	179	164	135	221	208	217	217
Saratoga	194	141	141	166	148	133	127	236	247	257	257
Silsbee	256	246	216	158	333	368	354	35	47	42	42
Silsbee, W	.....	.....	.....	.....	4	17	12	0	0	2	2
Sour Lake	219	176	225	190	193	207	153	193	140	152	154
Total	1,040	874	879	799	942	973	842	695	651	681	683
Harris County:											
Bammel	26	57	112	139	26	17	19	1	15	16	16
Clear Lake	37	96	191	179	290	295	288	2	56	59	59
Clinton	46	36	27	19	22	25	23	8	8	7	7
Dyersdale	.....	.....	.....	39	119	195	226	0	9	36	39
Eureka Heights	470	568	506	409	343	255	265	25	33	37	35
Fairbanks	1,391	1,195	1,359	1,076	1,353	1,546	1,321	145	282	295	306
Friendswood	1,082	1,173	1,556	978	1,354	1,649	1,671	113	209	210	210
Humble	570	473	555	489	444	523	408	295	258	279	282
Mykawa	186	213	186	196	141	128	120	32	28	30	30
Pierce Junction	470	459	373	288	305	354	300	78	73	79	81
Satsuma	59	47	67	53	44	47	42	9	12	12	12
South Houston	528	416	357	280	400	397	302	94	95	96	96
Tomball	1,343	1,142	1,396	1,715	1,522	1,802	1,628	394	437	481	481
Goose Creek	327	350	295	308	265	260	257	98	88	93	94
Miscellaneous	.....	10	10	16	71	19	33	0	4	6	9
Total	6,535	6,235	6,990	5,584	6,649	7,512	6,903	1,294	1,607	1,736	1,757
Houston County:											
Kittrell (Trinity)	97	73	64	55	61	78	72	13	22	16	16
Jackson County:											
Cordele	226	429	422	311	230	256	204	15	44	45	45
Francitas	31	32	48	45	52	49	35	1	8	8	10
Ganado	6	4	1	1	28	110	109	1	1	21	50
Ganada, W	.....	.....	27	47	45	41	148	0	11	26	29
La Ward, N	.....	.....	.....	.....	.....	21	219	0	0	15	44
Lolita	.....	.....	5	174	525	913	1,127	0	57	169	178
Maurbro	.....	.....	.....	.....	26	167	275	0	0	31	44
Mauritz	22	22	67	124	60	44	30	2	8	8	8
West Ranch	50	179	622	1,155	1,525	2,165	2,445	6	221	366	373
Mayo	.....	.....	.....	.....	.....	.....	23	0	0	0	2
Miscellaneous	.....	2	2	6	3	9	8	0	8	9	10
Total	335	668	1,194	1,863	2,494	3,775	4,624	25	359	698	793
Jefferson County:											
Amelia	532	397	528	360	581	660	693	114	114	112	112
Beaumont, W	364	620	564	554	463	354	356	46	57	63	64

(Continued on next page)

wildcatting has been limited and no large geophysical program was ever undertaken. However, since the successful development of the middle Wilcox in Central Louisiana it became apparent that this particular sector of the trend offered favorable possibilities, and this has been more or less confirmed by recent gas discoveries in the Millican area, Brazos County, and the Cistern area, Grimes County. In addition, shallow production was indicated for the Lovelady area, Houston County, while a wildcat located in Trinity County had logged sufficient showings to cement casing for testing. At a recent date approximately five wildcats were located in this area and geophysical activity was being increased.

The new discoveries in Jackson County included Mayo, Harmon, and West Mauritz. In addition, another wildcat about 4 miles southeast of Ganado was showing promise of production. Due to the limited amount of development the potentialities of these discoveries cannot be accurately measured although early indications point to fields of considerable size, and it is possible that the Harmon and Mayo fields may be eventually joined. Production of all three fields is from the Frio sand which is found from 5,300-5,400 ft. and has a thickness of approximately 8 to 12 ft. Jackson County has for the past 2 years been the most active county in the district as the result of large-scale drilling programs in such fields as West Ranch, Lolita, West Ganado, Ganado, and North La Ward. However, with the exception of the North La Ward field, drilling in the other fields has been greatly curtailed, although the slackening of drilling is expected to be taken up by the newer discoveries, due to the diversified ownership in all three fields.

North La Ward

The North La Ward field, opened in September of last year, has received a broad drilling campaign, and while development has been curtailed recently, several active operations are reported. At a recent date 59 wells had been completed and the limits of the field had not been defined in several directions. The most interesting feature of development during the year was the opening of a second sand at 5,600 ft., about 400 ft. deeper than the discovery pay. This sand was indicated to be a blanket sand as the result of a second completion about a mile to the south. Thus far development of the new sand has been limited to the two wells.

As of July 1, 404 wells had been drilled in the district which is a decrease of 133 wells from the same period a year ago. Of the completed wells, 17 were gas wells and 94 were dry holes.

Production Drops

The interruption of transportation facilities between the Gulf Coast and Atlantic ports, particularly during the second quarter, is reflected by a decline in production from the coastal area. The relative importance of the Jackson County discoveries is indicated by an increase in production from that county in spite of the opposite trend displayed by the district as a whole. None of the Wilcox areas recently opened has been fully developed as the market is unable to handle the added oil, but it is obvious that the new developments in these two areas will add to the importance of the area after the war when production restrictions will have been lightened and the Gulf Coast will be called upon to supply markets now provided for by unprorated areas.

Offshore drilling in the Gulf of Mexico has probably ceased until the submarine menace has been removed and the one field now known in this area, Sabine Pass, has been shut down.

TEXAS GULF COAST

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Aldine	1	1	36	0	0
Anahuac	3	2	695	0	1
Ariola	1	0	0	0	1
Alta Loma	1	1	511	0	0
Bailey's Prairie	1	1	19	0	0
Bammel	1	0	0	1	0
Barbers Hill	1	1	36	0	0
Big Hill	1	0	0	0	1
Blue Ridge	2	1	23	0	1
Boling	2	2	337	0	0
Caplen	1	1	45	0	0
Camp Eleven	3	2	1,187	0	1
Chocolate Bayou	2	2	351	0	0
Chenango	1	0	0	1	0
Citrus Grove	2	0	0	2	0
Cistern	1	0	0	1	0
Clodine	5	4	395	0	1
Conroe	6	1	156	0	5
Danbury	3	1	90	0	2
Dickinson	1	0	0	1	0
Dyersdale	7	6	1,736	0	1
Esperson	4	2	849	2	0
Fannett	3	1	202	0	2
Fig Ridge	16	16	5,942	0	0
Fred	1	1	181	0	0
Fostoria	1	1	100	0	0
Francitas	2	2	157	0	0
Ganado	13	12	2,065	0	1
Goodrich	3	1	46	0	2
Hampton	1	1	237	0	0
Hillje	1	1	42	0	0
Harmon (South Ganado)	3	3	320	0	0
Hull	4	3	848	0	1
Katy	1	0	0	1	0
Lake Creek	7	6	1,874	0	1
Lolita	15	13	2,526	0	2
Looneys Creek (Mayo)	5	5	609	0	0
Lovells Lake	11	10	1,345	0	1
Livingston	2	1	198	1	0
Lucky	1	0	0	0	1
Magnet	3	2	105	0	1
Manvel	1	0	0	0	1
Markham	3	1	157	0	2
Maurbro	22	21	6,244	0	1
Martha	1	0	0	0	1
Mercy	4	4	2,378	0	0
Millican	1	0	0	1	0
Mykawa	1	1	70	0	0
Needville	2	2	359	0	0
Nome	1	0	0	1	0
North La Ward	46	43	8,060	1	2
North Markham	3	3	628	0	0
Old Ocean	4	4	1,848	0	0
Ogburn	1	0	0	1	0
Orange	1	1	24	0	0
Oyster Bayou	6	6	1,991	0	0
Pierce Junction	1	1	105	0	0
Port Neches	4	2	92	0	2
Provident City	1	1	90	0	0
Ramer's Island	1	0	0	0	1
Rosenberg	1	1	30	0	0
Red Fish Reef	2	1	187	0	1
Sabine Pass	2	0	0	0	2
Sour Lake	1	1	30	0	0
Spanish Camp	1	0	0	1	0
Sugarland	1	0	0	0	1
Stowell	7	6	2,187	0	1
Seabreeze	1	1	817	0	0
Southwest Mauritz	1	1	90	0	0
Sheridan	2	2	311	0	0
Spindletop	1	0	0	0	1
Texana	4	1	70	0	3
Thompson	1	1	400	0	0
Tomball	1	1	29	0	0
Van Vleck	1	1	153	0	0
West Beaumont	3	3	508	0	0
West Columbia	4	3	922	0	1
West Ganado	9	7	649	0	2
West Ranch	13	12	1,540	1	0
Willow Slough	1	1	119	0	0
Withers	55	53	7,614	1	1
Miscellaneous	45	0	0	0	45
Total	404	293	60,965	17	94

Completions by Months

Month—	Comp.	Oil	Prod.	Gas	Dry
January	94	71	15,047	4	19
February	80	54	12,783	2	24
March	55	39	8,998	2	14
April	53	40	8,067	2	11
May	66	52	9,721	2	12
June	56	37	6,349	5	14
First half 1942	404	293	60,965	17	94
First half 1941	537	415	108,064	21	101
Difference	133	122	47,099	4	7

TEXAS GULF COAST (continued)

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Clam Lake	27	23	28	60	63	73	53	4	13	14	14
Fannett	85	62	64	113	193	255	211	19	34	50	50
La Belle	109	48	27	10	25	39	36	1	8	10	10
Lovells Lake	70	169	407	466	658	686	780	4	69	82	86
Nome	227	151	149	166	280	288	248	42	43	43	43
Sabine Pass	.....	.....	.....	.....	6	5	.....	0	0	1	0
South China	.....	15	46	61	94	84	66	0	16	18	18
Spindletop	375	341	316	258	244	244	202	153	145	145	145
Stowell	.....	.....	.....	.....	.....	.....	91	0	0	0	5
Total	1,789	1,826	2,129	2,048	2,607	2,688	2,736	7,343	499	538	547
Liberty County:											
Cleveland	61	46	43	27	37	50	44	10	10	10	10
Esperson	215	282	358	434	435	510	447	48	61	82	86
Hankamer	196	163	151	108	114	123	102	36	34	34	34
Hardin	1,158	1,006	936	703	771	870	625	112	158	161	161
Hull	1,192	1,066	977	1,133	1,052	1,386	1,091	177	181	205	207
Martha	.....	24	41	44	68	92	92	0	7	12	12
North Dayton	16	11	12	7	4	3	1	8	8	9	9
South Liberty	76	63	98	93	82	80	61	44	41	44	44
Total	2,914	2,661	2,616	2,549	2,563	3,114	2,462	435	500	557	563
Matagorda County:											
Bay City	354	408	596	556	374	417	362	32	45	52	53
Buckeye - Wilson Cr.	36	21	32	49	25	39	10	4	5	5	5
Hamman	461	384	462	363	318	336	285	17	21	31	31
Lucky	.....	.....	.....	.....	5	10	33	0	0	2	2
Markham	307	273	198	157	129	144	145	26	48	56	59
Markham, N	16	15	18	16	53	137	134	2	4	20	23
Miscellaneous	50	34	30	21	36	32	28	6	9	15	15
Total	1,224	1,135	1,336	1,162	940	1,115	997	87	132	181	188
Montgomery County:											
Conroe & W	5,067	4,133	4,516	4,787	5,847	5,907	5,928	946	935	936	938
Lake Creek	.....	.....	.....	.....	15	32	34	0	0	3	8
Miscellaneous	.....	.....	.....	.....	.....	7	0	0	0	0	3
Total	5,067	4,133	4,516	4,787	5,862	5,946	5,962	946	935	939	949
Orange County:											
Orange	481	422	451	441	452	428	365	68	79	89	71
Port Neches	163	161	172	146	187	200	165	17	19	42	43
Total	644	583	623	587	639	628	530	85	98	131	114
Polk County:											
Ace	21	46	80	61	40	35	29	3	8	5	5
Livingston	321	233	295	315	290	286	274	89	86	86	86
Segno	482	416	653	902	761	775	666	46	103	121	121
Goodrich	.....	.....	.....	.....	.....	.....	19	0	0	0	1
Total	824	695	1,028	1,278	1,091	1,096	988	138	197	212	213
Tyler County:											
Joe's Lake-Spurger	197	210	303	524	461	460	404	15	44	47	47
Camp Eleven	.....	.....	.....	.....	.....	.....	51	0	0	1	2
Miscellaneous	.....	.....	.....	.....	1	5	13	0	0	0	2
Total	197	210	303	524	462	465	468	15	44	48	51
Washington County:											
Brenham	5	5	6	4	2	2	1	34	24	20	16
Clay Creek	96	72	72	63	77	77	69	50	54	54	54
Total	101	77	78	67	79	79	70	84	78	74	70
Wharton County:											
Boling	289	279	249	219	206	184	176	95	93	95	98
Hillje	.....	1	11	60	105	128	106	0	14	18	19
Louise	246	217	173	179	211	221	213	34	41	41	41
Picketts Ridge	286	288	342	280	366	417	326	29	45	69	94
Withers-Magnet	813	825	1,260	932	1,589	1,938	1,708	121	287	357	387
Miscellaneous	.....	.....	.....	.....	11	15	4	0	1	2	2
Total	1,634	1,610	2,035	1,670	2,488	2,904	2,533	279	482	582	661
San Jacinto County:											
Shepherd	.....	.....	.....	2	2	3	1	0	1	1	1
Mercy	.....	.....	.....	.....	.....	.....	44	0	0	0	2
Total	.....	.....	.....	2	2	3	45	0	1	1	3
Total U. Gulf	39,501	39,478	43,404	39,471	45,734	51,675	48,351	6,877	8,375	9,405	9,611

SPACING RULES CAUSE OF DROP IN DRILLING AND DISCOVERIES

By F. L. SINGLETON

THE curtailment of drilling around proven salt dome structures in the Louisiana Gulf Coast district, resulting from the M-68 order, restricting the drilling of one well to 40 acres, was responsible for a large decline in the number of completed wells during the first 6 months of the year. This type of development has been for the past several years one of the most interesting phases of development and its success has been responsible for large-scale drilling programs around the flanks of several old domes. Due to the irregularity of sand conditions around salt-dome structures, it has been necessary to curtail drilling, and the majority of field development was shifted to blanket sand fields, generally recognized as deep-seated salt-dome structures but in which no salt material has been encountered. There is still a limited amount of exploration around known salt structures, and activity may be increased to some extent in the future as some exceptions to the M-68 order were recently granted by OPC.

There were only four fields opened, compared to a total of 10 fields found during the same period a year ago. Two of these were Wilcox sand discoveries in Rapides and Concordia parishes, and the balance were gas-distillate fields in Calcasieu, Jefferson Davis and Iberia parishes. Activity in these fields is in the early stages of development. The most important appears to be the Ferriday pool located just east of the Mississippi River where California Co. has completed two producers. The most significant feature of this discovery is that the discovery well, 1 Pan American Life Insurance Co., produced gas-distillate from the Tuscaloosa sand at 8,935-46 ft., before plugging back and completing in the Wilcox at 4,567-71 ft. The discovery not only provides an extension to the Wilcox play but encourages deeper exploration throughout Central Louisiana, Mississippi and Alabama districts.

Hayes Discovery

Of the gas-distillate pools opened, probably the most important was the Hayes field in Calcasieu Parish, opened by Gulf Oil Corp. which found production in sand at 11,660-70 ft. and 11,646-56 ft. This prospect had been looked upon favorably for several years and the discovery well was the second to be drilled by the company. Several sands other than the discovery pay have been logged and the area looms as a large gas-distillate reservoir. Due to the depth which production is obtained development is expected to be slow.

Exploration in older fields added two salt-dome structures to the district. These included the West Bay field, Plaquemines Parish, and the Bay De Chene field in Jefferson Parish. West Bay, a 1940 discovery in which 15 producers have been completed, was established a deep-seated dome when salt material was encountered at 10,005 ft. Thus far this is the only well to log salt, and development has been largely restricted to Miocene sands which produce at intervals from approximately 6,800-7,400 ft.

The Bay De Chene gas field, a 1941 discovery, was proved a salt dome with the drilling of Texas 1-B La Fourche Basin Levee District. Salt was topped at 8,634 ft. and the well was abandoned at a total depth of 8,680 ft. Following this abandonment Texas 2-B La Fourche Basin Levee District, an outpost test in 28-19s-24e, provided the

PRODUCTION 1939-1942
(In thousands of barrels)

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Acadia Parish:											
Bayou Mallett	44	44	40	41	43	47	46	5	6	5	5
Bosco-Cankton	908	855	870	875	796	727	681	54	57	53	49
Crowley North	376	443	690	905	1,014	1,013	948	11	36	41	40
Jennings	4,783	3,650	2,881	2,613	2,568	2,460	2,383	133	137	149	148
Richie	.....	.....	.....	.....	31	99	137	0	1	7	10
Tepetate	1,006	986	904	709	739	703	502	53	50	44	37
Miscellaneous	33	28	21	23	57	47	34	2	3	4	5
Total	7,150	6,006	5,406	5,166	5,248	5,096	4,731	258	289	304	295
Allen Parish:											
North Elton	.....	4	3	6	7	8	8	0	2	2	1
Avoyelles Parish:											
Eola	78	887	1,995	1,884	1,784	1,841	1,709	0	92	96	96
Beauregard Parish:											
Bancroft	353	543	581	503	426	434	192	9	41	32	31
Neale	.....	.....	20	298	396	473	384	0	10	13	15
Total	353	543	601	801	822	907	576	9	51	45	46
Calcasieu Parish:											
Edgerly	27	31	45	54	62	49	54	12	15	15	14
Gillis	1,167	1,028	866	725	663	650	484	60	39	44	43
Lockport	207	177	140	165	150	148	138	22	21	21	20
Starks	80	83	78	84	74	72	86	20	22	22	23
Sulphur	738	638	470	416	438	489	400	62	66	66	67
Vinton	220	198	172	150	134	186	206	70	74	46	47
Hayes	.....	.....	.....	.....	.....	.....	2	0	0	0	1
Total	2,439	2,155	1,771	1,594	1,521	1,594	1,370	246	227	212	213
Cameron Parish:											
Black Bayou	475	501	511	499	423	452	431	19	20	19	18
Cameron Meadows	425	385	357	354	426	380	323	36	30	37	38
Chalkley	46	173	414	535	755	906	808	1	17	30	32
Creole	249	310	347	234	226	169	138	3	8	7	8
Hackberry East	1,017	944	861	788	802	808	864	50	64	60	63
Hackberry West	627	644	769	903	1,038	1,093	1,033	57	61	67	69
Grand Lake	20	121	456	936	876	766	616	0	22	22	23
Sweet Lake	206	183	203	314	364	404	325	6	12	16	16
Miscellaneous	.....	.....	.....	.....	11	15	14	0	1	4	4
Total	3,065	3,271	3,918	4,563	4,921	4,993	4,552	172	235	262	269
Evangeline Parish:											
Ville Platte	1,373	2,039	2,477	1,977	2,320	3,727	3,616	34	133	190	204
Pine Prairie	.....	.....	.....	.....	11	224	331	0	0	10	13
Total	1,373	2,039	2,477	1,977	2,381	3,951	3,947	34	133	200	217
Iberville Parish:											
Bayou Pigeon	.....	.....	24	70	135	149	125	0	2	5	5
Fausse Point	4	5	15	10	6	38	26	1	4	5	6
Jefferson Island	38	105	158	192	172	186	109	2	6	9	8
New Iberia	2,365	1,845	1,754	1,336	1,346	1,400	1,216	48	75	80	82
Vermilion Bay	.....	56	45	35	66	60	65	0	2	2	2
Total	2,407	2,011	1,996	1,643	1,725	1,833	1,541	51	89	101	103
Jefferson Davis Parish:											
Iowa	2,484	1,947	1,863	1,565	1,685	1,665	1,360	71	52	62	63
Jennings South	11	19	36	23	20	50	15	2	4	6	3
Roanoke	466	325	312	300	291	315	311	25	17	17	16
Roanoke S	109	181	202	170	118	128	106	2	7	8	8
Woodlawn	206	285	368	502	565	593	423	4	15	22	19
Miscellaneous	10	14	23	26	30	29	16	14	16	20	19
Total	3,286	2,751	2,804	2,587	2,709	2,780	2,231	118	111	135	134
Rapides Parish:											
Cheneyville	93	267	504	465	523	532	476	5	31	31	31
St. Landry Parish:											
Port Barre	293	404	414	470	466	571	498	32	29	43	45
St. Martin Parish:											
Anse La Butte	13	11	39	370	571	938	1,134	9	28	59	62
Happytown	.....	13	57	52	90	79	72	0	2	2	2
Plumb Bob	.....	.....	50	57	54	95	40	0	2	4	1
St. Martinsville	114	90	82	42	55	51	32	2	2	2	2
Lake Chicot	.....	.....	.....	.....	229	384	420	1	5	18	17
West Lake Verret	63	66	68	109	.....	25	85	0	0	2	3
Miscellaneous	.....	3	2	2	23	39	15	0	3	5	3
Total	190	183	298	632	1,022	1,611	1,798	14	44	93	91
St. Mary Parish:											
Bateman Lake	83	163	172	144	112	101	67	1	5	4	4
Belle Isle	.....	.....	.....	.....	1	.....	1	0	0	1	1
Charenton	1,066	1,408	1,647	1,200	993	919	737	38	179	155	154
Horseshoe Bayou	117	177	192	231	228	219	163	2	5	6	4
Jeanerette	1,079	693	656	560	534	469	338	23	21	18	21
West Cote Blanche	.....	.....	7	96	158	184	220	0	4	6	10
Bayou Sale	.....	.....	.....	.....	.....	.....	418	0	0	0	14
Total	2,345	2,441	2,664	2,231	2,026	1,897	1,944	64	214	190	208
Vermilion Parish:											
Abbeville	70	107	95	76	75	58	49	5	7	10	11
Erath	.....	.....	1	6	48	126	114	0	1	7	8
Gueydan	76	73	76	58	197	393	415	5	5	15	18
Gueydan West	24	100	123	113	94	68	74	1	6	5	4
White Lake East	.....	.....	.....	13	34	46	82	0	1	4	4
Total	170	280	295	266	448	691	734	11	20	41	46
Total west dist.	23,242	23,242	25,146	24,285	25,553	28,365	26,115	1,014	1,568	1,755	1,795

(Continued on next page)

structure with its first production when prolific flow was opened from the Miocene sand at 7,470-7,500 ft. Thus far this is the only oil producer to be completed, another dry hole having been recently abandoned at a depth below 11,400 ft.

The Bayou Sale field, last year's outstanding discovery, has been one of the most active fields in the district. At the end of June, 14 producers had been completed, making a total of 16 producers for the structure. Development has followed a southward trend and there is little doubt that production will be joined with that of the Bateman Lake field. While development has been confined largely to the 10,100-10,200 and 10,300 ft. sands, gas-distillate production was opened in the extreme southern portion of the field from a new sand at 10,703 ft. The discovery well of this sand Atlantic 3 St. Mary Parish Land Co., was drilled to a total depth of 12,000 ft., and promise of production from deeper sands below 11,000 ft. was indicated. The new pay is believed to correlate with the producing sand at Bateman Lake and it is in this area in which the major share of development is to be centered.

New Sands Found

Production from new sands in several of the newer pools were recorded. These included a 11,000-ft. discovery in the Delta Duck Club field, and an 8,900-ft. discovery in the Delacroix Island field, both fields being last year's discoveries and being located in Plaquemines Parish. Other late discoveries which received important attention included the Lake Chicot field, St. Martin Parish, East White Lake, Vermilion Parish, and the Port Allen field, West Baton Rouge Parish.

In spite of the curtailment in exploration around old salt structures, several important sand discoveries were made. Texas Co. added new production to the flank of the old Leeville dome, La Fourche Parish, with the completion of 86 Louisiana Land & Exploration Co., completed in sand at 10,078-85 ft., while at the Lake Pelto field, Terrebonne Parish, Texas 38 State, located on the extreme southeast flank, was completed for a large producer from sand at 11,400-20 ft. Other important discoveries were opened at the Vinton and Starks fields, two shallow salt structures in Calcasieu Parish.

Exploration in the University field, East Baton Rouge Parish, was also revived with a new sand discovery made by William Helis 12 H. B. Nelson, completed at 9,567-72 ft. A second producer has been completed in this same sand which indicates the new discovery blankets the entire structure. There are some 83 producing wells in this field, and many of these can be expected to be deepened after production from the main sands at intervals from 6,400-7,200 ft. become depleted.

LOUISIANA GULF COAST DISTRICT

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Abbeville	1	0	0	0	1
Anse La Butte	6	6	137	0	0
Bastian Bay	1	1	211	0	0
Barataria	2	1	89	0	1
Bayou Blue	4	3	350	0	1
Bayou Choctaw	1	0	0	0	1
Bay De Chene	2	1	325	0	1
Bayou Des Allemands	4	4	618	0	0
Bayou Des Glaize	1	0	0	0	1
Bayou Sale	14	11	1,955	0	3
Belle Isle	4	0	0	0	4
Black Bayou	1	1	324	0	0
Big Lake	1	0	0	0	1
Bosco	1	1	30	0	0
Caillou Island	1	1	259	0	0
Cameron Meadows	5	1	51	0	4
Chacahoula	4	4	695	0	0
Chalkley	3	3	625	0	0
Charenton	3	3	426	0	0
Creole	1	0	0	0	1
Delta Farms	4	3	709	0	1
Delta Duck Club	1	0	0	0	1
Dog Lake	1	0	0	0	1
East Hackberry	2	2	339	0	0
Edgerly	1	0	0	0	1
Erath	3	2	164	0	1
Fausse Point	2	1	67	0	1
Garden Island	3	3	445	0	0
Gibson	2	1	406	1	0
Golden Meadow	4	3	242	0	1
Grand Bay	5	4	1,421	0	1
Gueydan	7	6	1,451	0	1
Horseshoe Bayou	2	1	296	0	1
Happytown	1	0	0	0	1
Hayes	1	1	53	0	0
Jennings	1	1	492	0	0
Jeanerette	1	1	250	0	0
Jefferson Island	1	1	136	0	0
Iowa	2	2	372	0	0
Lake Long	1	0	0	0	1
Lake Mongoulois	1	0	0	0	1
Lake Hermitage	1	0	0	0	1
Lake Pelto	2	2	388	0	0
Lake Salvador	3	3	1,401	0	0
Lafitte	5	4	1,077	0	1
Leeville	2	2	413	0	0
Lake Chicot	2	2	389	0	0
Lakeside	1	1	74	0	0
Lewisburg	3	2	126	0	1
Lirette	1	1	197	0	0
Neale	4	4	1,107	0	0
New Iberia	4	2	465	0	2
North Crowley	2	2	914	0	0
Paradis	17	17	8,325	0	0
Pecan Lake	1	0	0	0	1
Pine Prairie	5	4	1,701	0	1
Port Allen	2	2	520	0	0
Point Au Fer	1	0	0	1	0
Port Barre	7	6	1,031	0	1
Potash	2	1	430	0	1
Quarantine Bay	3	3	760	0	0
Ritchie	2	2	165	0	0
Raceland	2	2	446	0	0
Roanoke	2	0	0	0	2
Schooner Bayou	2	2	771	0	0
Starks	3	2	388	0	1
St. Gabriel	3	3	601	0	0
Sorrento	1	1	60	0	0
South Catahoula	1	1	42	0	0
Stella	2	0	0	0	2
Sweet Lake	2	1	73	0	1
Sulphur	2	1	82	0	1
Thornwell	1	1	40	0	0
Tepetate	1	0	0	0	1
University	2	2	426	0	0
Unknown Pass	2	1	21	0	1
Vermilion Bay	1	1	292	0	0
Venice	4	3	762	0	1
Valentine	1	0	0	0	1
Ville Platte	12	11	2,311	0	1
Vinton	5	2	280	0	3
Westwego	1	1	194	0	0
Welsh	2	0	0	0	2
West Hackberry	4	3	1,143	0	1
West Bay	4	3	520	0	1
West Cote Blanche	3	3	625	0	0
West Lake Verret	3	3	941	0	0
West Gueydan	1	1	239	0	0
White Castle	1	1	159	0	0
Miscellaneous	26	0	0	0	26
Total	270	182	42,837	2	86

Completions by Months

Month—	Comp.	Oil	Prod.	Gas	Dry
January	68	46	8,480	0	22
February	48	35	8,838	0	13
March	34	24	5,479	0	10
April	46	32	8,604	1	13
May	40	24	6,601	0	16
June	34	21	4,835	1	12
First half 1942	270	182	42,837	2	86
First half 1941	453	311	79,421	10	132
Difference	183	129	36,584	8	46

LOUISIANA GULF COAST (continued)

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Eastern district:											
Ascension Point:											
Darrow	568	456	406	346	336	338	289	9	17	19	19
Sorrento	65	48	39	31	30	25	27	5	4	7	7
Total	633	504	445	377	366	363	316	14	21	26	26
East Baton Rouge Parish:											
University	312	1,135	1,792	1,681	1,810	1,804	1,667	6	89	87	88
Iberville Parish:											
Bayou Blue	7	.....	23	114	278	362	391	1	11	27	29
Choctaw	245	174	190	160	264	244	167	10	14	15	12
St. Gabriel	.....	.....	.....	.....	41	439	688	0	0	19	23
White Castle	332	298	364	442	485	450	451	7	14	16	17
Total	589	478	584	740	1,074	1,495	1,697	18	39	77	81
Jefferson Parish:											
Barataria	.....	15	121	303	423	610	526	0	10	21	22
Lafitte	2,705	2,044	2,232	2,304	2,277	2,234	1,912	27	50	55	59
Westwego	.....	.....	.....	.....	7	27	403	0	0	3	3
Bay de Chene	.....	.....	.....	.....	.....	.....	140	0	0	0	1
Total	2,705	2,059	2,353	2,607	2,707	2,871	2,981	27	60	79	84
La Fourche Parish:											
Chacahoula	171	173	221	235	234	246	292	2	7	12	13
Delta Farms	.....	.....	.....	21	59	86	76	0	1	3	5
Golden Meadow	29	666	1,936	2,073	2,228	2,607	2,146	1	143	191	189
La Fourche Crossing	.....	38	81	114	139	105	21	0	4	4	1
Lake Long	204	229	250	222	270	278	282	5	12	16	16
Leesville	744	575	543	625	880	702	519	91	82	82	82
Raceland	290	211	199	254	273	276	291	3	7	8	9
Timbalier Bay	29	26	34	32	28	27	19	0	2	2	2
Valentine	686	472	445	431	323	211	131	23	25	19	21
Total	2,153	2,390	3,709	4,027	4,434	4,538	3,777	125	283	337	338
Orleans Parish:											
Unknown Pass	.....	.....	.....	.....	.....	.....	5	0	0	0	2
Plaquemines Parish:											
Garden Island Bay	260	327	509	498	619	594	610	8	24	24	33
Grand Bay	200	206	443	720	892	1,124	1,046	3	21	31	34
Lake Hermitage	11	9	6	4	4	2	2	2	2	2	2
Lake Washington	135	134	105	100	86	106	63	7	7	7	7
Octave Pass	.....	.....	.....	.....	10	14	22	0	0	1	2
Potash	41	88	118	154	289	360	339	0	8	13	12
Quarantine Bay	349	443	736	814	1,086	1,200	1,096	4	23	34	37
Stella	.....	.....	12	25	92	91	93	0	2	5	5
Venice	240	288	384	440	510	658	619	5	15	20	23
West Bay	.....	.....	.....	.....	70	341	388	0	0	14	16
Lake Salvador	.....	.....	.....	.....	238	388	319	0	2	10	10
Bastian Bay	.....	.....	.....	.....	.....	10	36	0	0	0	2
De la Croix	.....	.....	.....	.....	.....	8	20	0	0	0	1
Total	1,236	1,495	2,313	2,755	3,896	4,894	4,653	29	104	164	184
St. Bernard Parish:											
Kenilworth	2	1	37	40	15	10	11	0	1	1	2
St. Charles Parish:											
Bayou des Allemands	18	41	57	35	40	88	111	2	5	6	7
Paradis	.....	20	99	242	403	682	944	0	8	20	29
Total	18	61	156	277	443	770	1,055	2	13	26	36
St. James Parish:											
Hester	13	4	11	5	15	13	10	1	1	4	4
La Pice	2	4	16	23	72	77	64	0	3	7	4
Total	15	8	27	28	87	90	74	1	4	11	8
St. John the Baptist Parish:											
La Place	.....	5	13	16	21	145	34	0	3	2	3
Terrebonne Parish:											
Bay St. Elaine	120	55	56	85	118	127	90	2	7	10	9
Caillou Island	2,689	1,408	1,387	1,086	1,005	978	775	38	48	49	50
De Large	18	14	36	24	27	20	14	0	1	1	1
Dog Lake	88	128	145	154	246	220	109	5	10	10	11
Gibson	540	588	639	686	688	676	671	13	17	18	18
Houma South	42	100	96	70	72	81	55	1	1	2	2
Lake Barre	200	153	169	148	109	114	94	26	22	21	22
Lake Pelto	143	237	271	238	198	177	120	6	11	13	14
Lirette	3	4	.....	26	27	30	67	1	7	6	7
Total	3,843	2,687	2,799	2,517	2,490	2,423	1,995	.....	.....	.....	.....
West Baton Rouge Parish:											
Port Allen	.....	.....	.....	.....	11	62	77	49	125	129	133
								0	0	3	4
Total East dist.	11,506	10,823	14,230	15,065	17,314	19,477	18,342	271	742	942	989
Total La. Gulf	34,748	34,065	39,384	39,350	42,907	47,838	44,457	1,285	2,309	2,697	2,784

INTENSE PROSPECTING UNCOVERS MANY SMALL POOLS

ALTHOUGH Illinois oil-field operations during the first 6 months of 1942 were void of the spectacular rapid development of new flush fields which is characteristic of the state and despite the withdrawal of many major companies from the extensive wildcatting campaign conducted in the state, the discovery rate of new fields in Illinois reached a higher peak during this period than during the same period of any previous year. Total completions during the half year,

ILLINOIS

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Akin	1	1	69	0	0
Allendale	6	5	250	0	1
Alma	1	1	15	0	0
Benton	2	2	80	0	1
Bible Grove	4	2	233	0	2
Bone Gap	7	7	1,021	0	0
Boulder	5	5	654	0	0
Boyleston	2	2	57	0	0
Calvin	1	0	0	0	1
Carlinville, North	2	0	0	0	2
Centralia	2	2	170	0	0
Clay City	10	9	976	0	1
Coil	5	3	1,448	0	2
Cook's Mills	1	0	0	0	1
Dahlgren	1	0	0	0	1
Dale	29	26	6,386	0	3
Dix	2	2	55	0	0
Dubois	1	1	10	0	0
Dundas	21	21	4,018	0	0
East Centerville	13	10	2,888	0	3
East Centralia	1	1	70	0	0
East St. Francesville	2	2	109	0	0
Epworth	6	5	404	0	1
Fairfield	10	9	2,319	0	1
Flora	1	0	0	0	1
Goldengate	1	1	15	0	0
Grayville, West	1	0	0	0	1
Griffin	7	6	2,035	0	1
Hoodville	5	4	708	0	1
Inman	7	5	502	0	2
Iron	3	2	376	0	1
Irvington	1	1	46	0	0
Johnsonville	31	26	5,268	0	5
Junction City	1	1	10	0	0
Keensburg	5	3	266	0	2
Lakewood	1	0	0	0	1
Louden	10	9	825	0	1
Martinsville	1	1	5	0	0
Mason	4	0	0	0	4
Maud	1	0	0	0	1
Maunie	2	1	58	0	1
Mayberry	2	2	1,164	0	0
Mill Shoals	22	18	1,609	0	4
Mount Carmel	5	4	640	0	1
New Harmony	34	29	3,197	0	5
Noble	8	5	523	1	2
North Benton	5	3	193	0	2
North Boos	2	1	100	0	1
North Sims	3	3	357	0	0
Olney	1	0	0	0	1
Parkersburg	16	10	6,696	0	6
Patton	2	1	15	0	1
Phillipstown	1	1	30	0	0
Plainview	1	0	0	1	0
Robinson	2	1	82	0	1
Roland	21	19	1,978	0	2
Rural Hill	64	57	10,295	0	7
Russellville	2	0	0	2	0
Sailor Springs	6	3	159	0	3
Ste. Marie	10	8	1,775	0	2
St. Paul	4	4	205	0	0
Salem	1	1	48	0	0
Siggins	1	0	0	0	1
Shipman	1	0	0	1	0
Sims	33	29	8,004	0	4
South Maunie	10	6	269	0	4
South Lawrence	1	1	126	0	0
Stringtown	3	3	286	0	0
Tamaroa	2	1	12	0	1
Walpole	9	9	1,440	0	0
West Centralia	4	2	140	0	2
West Clay City	15	10	5,339	0	5
Woburn	2	1	3	0	1
Woodlawn	13	7	488	0	6
Dupo	6	5	155	0	1
Storms	1	1	13	0	0
Stokes	1	1	8	0	0
Wildcats	280	44	7,427	3	233
Miscellaneous	22	15	3,874	0	7
Total	833	480	88,095	8	345

Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	272	188	2	82	739,016
February	103	63	1	39	295,155
March	71	36	1	34	178,636
April	95	41	0	54	264,233
May	151	84	3	64	372,489
June	141	68	1	72	363,420
First half 1942	833	480	8	345	2,212,949

PRODUCTION 1939-1942

(In thousands of barrels)

ILLINOIS

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Centralia-Salem:											
Alma	.....	.....	.....	.....	.....	8	12	0	0	1	3
Bartelso	57	50	165	211	138	116	95	37	40	64	61
Boulder	.....	.....	.....	.....	.....	.....	31	0	0	0	10
Carlyle	15	14	15	16	14	31	12	78	78	103	95
Centralia	1,224	1,042	5,600	5,042	2,079	1,485	1,326	529	883	797	570
Cordes	143	705	378	336	283	249	230	0	128	128	119
Cravat	.....	10	38	29	24	44	21	0	11	11	9
Dix	368	337	399	319	329	458	356	35	65	70	79
Dubois	.....	.....	10	8	18	17	16	0	4	9	8
East Patoka	.....	.....	.....	.....	175	484	346	0	0	56	50
Fairman	.....	15	106	101	168	141	108	0	16	24	24
Hoffman	.....	.....	15	97	84	65	54	0	40	44	38
Irvington	.....	.....	.....	509	502	536	411	0	39	74	74
McKinley	.....	.....	.....	.....	49	35	28	0	1	6	5
Patoka	228	265	215	203	193	225	147	104	106	114	94
Roaches	34	39	102	73	53	41	24	2	11	10	12
Salem	17,118	33,062	43,848	26,787	17,432	12,107	8,316	476	2,376	2,379	2,311
Sandoval	.....	660	403	302	254	195	119	37	48	49	47
Tonti	16	818	1,397	1,159	671	579	466	40	53	56	67
Woodlawn	.....	.....	.....	.....	14	2,451	1,936	0	1	137	131
Miscellaneous	11	10	10	9	9	10	17	42	36	38	39
Total	19,214	37,027	52,701	35,201	22,489	19,277	14,071	1,380	3,936	4,170	3,848
Louden area:											
Louden	6,420	11,930	13,319	13,177	11,880	11,138	9,629	488	1,755	1,911	1,886
Mason	.....	.....	.....	4	59	76	58	0	1	17	19
St. James	174	264	565	1,149	1,038	833	791	24	173	182	175
St. Paul	.....	.....	.....	.....	.....	.....	28	0	0	0	5
Woburn	.....	.....	.....	94	96	65	50	0	24	27	28
Miscellaneous	.....	2	2	.....	12	12	7	0	8	9	6
Total	6,594	12,196	13,886	14,424	13,085	12,124	10,563	512	1,961	2,146	2,119
Dale-Hoodville:											
Benton	.....	.....	.....	.....	1,579	4,190	3,430	0	0	222	237
Dale	.....	.....	56	258	2,309	3,886	2,849	0	177	280	310
North Benton	.....	.....	.....	.....	.....	23	57	0	0	6	8
Rural Hill	.....	.....	.....	.....	.....	1,570	2,432	0	0	94	146
Thompsonville	.....	.....	.....	79	78	39	21	0	16	18	18
Walpole	.....	.....	.....	.....	.....	210	387	0	0	25	27
Miscellaneous	.....	.....	.....	.....	4	4	11	0	1	2	4
Total	.....	.....	56	689	3,970	9,922	9,087	0	94	647	750
Wabash River area:											
Cowling	.....	23	32	19	32	27	19	0	13	12	13
Epworth	.....	.....	.....	.....	.....	12	49	0	0	4	8
Grayville	.....	26	46	20	16	25	16	7	5	4	6
Inman	.....	.....	2	2	124	338	273	0	3	47	45
Junction	.....	21	44	59	32	13	5	0	14	14	14
Keensburg	14	873	1,372	1,437	1,156	846	864	0	262	298	273
Lancaster	.....	.....	102	241	70	29	20	0	29	23	15
Maud	.....	.....	.....	47	97	62	30	0	9	18	22
Mount Carmel	.....	.....	3	23	686	1,005	629	0	7	186	169
New Haven	.....	.....	.....	.....	32	140	70	0	0	19	18
New Harmony	.....	5	109	1,393	4,586	5,353	3,879	0	196	648	629
Omaha	.....	.....	.....	12	189	142	140	0	1	20	21
Phillipstown	.....	7	21	28	23	33	23	0	6	11	9
Roland	.....	.....	.....	.....	6	1,095	1,046	0	1	91	100
South Maunie	.....	.....	.....	.....	9	381	362	0	0	52	61
S New Harmony	.....	.....	.....	.....	17	7	7	0	0	4	4
Stokes	.....	64	77	30	22	65	208	0	11	17	16
Storms	.....	42	495	1,019	814	584	411	0	128	153	135
Iron	.....	.....	474	646	430	369	270	0	46	64	58
Miscellaneous	.....	.....	.....	.....	12	9	34	0	4	6	9
Total	14	1,061	2,777	4,979	8,352	10,535	8,355	7	735	1,690	1,625
Clay City area:											
Aden	28	30	38	73	73	60	62	4	7	7	6
Albion	.....	.....	88	1,006	448	252	281	0	73	70	74
Barnhill	3	561	355	291	147	84	86	0	63	63	54
Bible Grove	.....	.....	.....	.....	.....	.....	55	0	0	0	6
Belle Prairie	.....	.....	.....	3	18	14	11	0	1	2	2
Bone Gap	.....	.....	.....	.....	18	46	90	0	0	4	8
Bonpas & W	.....	.....	.....	.....	6	59	45	0	0	8	7
Boyleston	35	134	296	1,010	433	382	299	1	88	100	99
Burnt Prairie	.....	.....	19	124	65	44	51	0	18	20	18
Centerville	.....	.....	.....	49	38	27	21	0	3	11	22
Cisne	815	369	325	153	123	90	91	25	47	45	41
Clay City	3,170	4,415	3,348	3,684	2,750	1,930	2,215	222	578	679	648
Coil	.....	.....	.....	.....	.....	.....	88	0	0	0	7
Dahlgren	.....	.....	.....	.....	335	346	86	0	0	42	37
Dundas	.....	209	1,052	1,289	2,066	2,372	1,412	0	125	233	256
East Centerville	.....	.....	.....	.....	.....	10	209	0	0	0	1
Flora	76	73	53	42	32	44	32	9	19	18	16
Goldengate	.....	.....	.....	.....	.....	.....	8	0	0	0	1
Johnsonville	.....	.....	.....	.....	.....	5,913	3,427	0	0	217	265
Leech	24	77	80	57	38	32	27	2	15	14	12
Mayberry	.....	.....	.....	.....	.....	6	57	0	0	2	3
Mill Shoals	.....	121	264	307	459	466	580	0	50	94	109
Noble	803	841	1,361	1,482	1,283	1,224	1,312	131	237	238	228
North Aden	320	415	417	491	350	217	133	40	66	63	65
North Boos	.....	.....	.....	249	375	450	245	0	9	44	55
Olney	187	241	111	100	80	64	32	28	38	34	30
Parkersburg	.....	.....	.....	.....	.....	785	897	0	0	24	33
Ste Marie	.....	.....	.....	.....	.....	6	175	0	0	2	10
Sailor Springs	.....	.....	.....	4	154	159	0	0	0	25	33
Schnell	31	16	12	9	8	6	6	4	4	4	4
Sims & N	.....	.....	.....	.....	.....	12	591	0	0	4	38

(Continued on next page)

however, were nearly 50 per cent below those for the first half of 1941. There were 833 tests completed during this period as compared to 1,517 for the same 6 months' period of 1941. Of these tests completed 480 were oil wells, a decline of 637 from last year.

Maintenance of Illinois oil production, due to the rapid decline of producing wells, is largely dependent upon the discovery and rapid development of new fields. The large drop in completions, consequently, took its toll on the state's crude output as evidenced by a steady decline from 11,585,000 bbl. in January to approximately 8,429,500 bbl. in June. Average daily production for the 6 months' period was approximately 315,558 bbl. This represents a decline of nearly 11,400 bbl. daily from 1941 production, same period.

ILLINOIS (Continued)

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Stringtown	.....	.....	.....	.....	.....	14	63	0	0	3	5
Miscellaneous	.....	.....	.....	.....	3	17	24	0	0	5	7
Total	5,492	7,502	7,819	10,319	9,152	15,132	12,870	455	1,441	2,075	2,199
La Salle anticline:											
Allendale-Linn	44	43	55	51	90	109	96	249	212	212	205
Bridgeport	690	701	721	921	997	1,095	983	3,571	3,501	3,261	3,180
Casey	138	145	146	189	200	194	201	3,234	3,150	3,030	2,950
Robinson	531	532	521	716	720	693	723	6,347	5,735	5,880	5,760
Total	1,403	1,421	1,443	1,877	2,007	2,091	2,003	13,445	12,671	12,453	12,095
Others:											
Colmar-Plymouth	65	63	62	59	58	56	54	209	210	216	220
Dupo	75	75	84	98	110	179	103	30	54	72	75
Miscellaneous	.....	.....	.....	.....	6	5	10	0	2	3	5
Total	140	138	146	157	174	240	167	239	264	291	300
Total Illinois	32,858	59,345	78,838	67,646	59,229	69,321	57,116	15,950	20,965	23,472	22,936

Majority of Discoveries Unimportant

Most of the new fields discovered in Illinois since January 1 have not been important insofar as their production affected the state's crude output. All, possible excepting the Boulder pool in Clinton County, were considered small fields with potentials far below that of the Rural Hill field in Hamilton County, regarded as the last major discovery in the basin.

The Bouler pool, outstanding discovery so far during the year, in reality was discovered in 1941 but remained idle until May of this year. The first well drilled in 1941 was completed in the Devonian lime as a large gas well. It blew off 250 bbl. of oil from this formation and then went to gas and was shut down. Saturation was reported in the Benoist and Cypress sands but neither of these formations were tested and no further exploration was undertaken in the area. Late in April of this year a south offset to this discovery was completed as a large oil producer in the Benoist sand and development of the field got under way immediately. The field is situated in river-bottom lands and drilling operations are possible only during periods of fair weather. To date 10 producing wells and 1 dry hole have been completed in the field and the limits are undefined. Because of the depth of the producing formation, approximately 1,200 ft., the pool has qualified for an exception to M-68 and development is proceeding on 20-acre spacing basis. The Boulder pool has probably had more effect on the crude output of the state than the rest of the 1942 discoveries combined. The Devonian remains untested in the new wells but is an excellent prospect for future exploration due to its showing in the discovery well.

McClosky Exploration Predominates

Although exploration has been statewide, the McClosky lime and the Aux Vases sands have been the predominate producing formations among the 1942 discoveries. A large number of the new discoveries have been in Wayne County and a great many of these have been along a trend with the Dundas, Clay City, and Johnsonville fields. Most of these discoveries have developed into relatively unimportant fields despite the fact that many of the discovery wells were exceptionally large producers. Outstanding among the McClosky discoveries are the Covington and Mayberry fields. The Covington field is the state's most recent discovery and at present has only three producing wells. All of these, however, have produced between 750 and 1,200 bbl. initially. Drilling restrictions have prevented rapid development but the pool appears to have an excellent future.

The Mayberry pool, although an earlier discovery, has only two producing wells at present. One of these, the discovery well, has been flowing steadily at the rate of 1,700 bbl. daily since completion. Dry holes have already limited this field on the south and northeast sides but the area to the north and west is virtually unexplored. Even though the pool is found to be small in extent, present indications point toward a large reserve to bolster Illinois' declining production.

Also in the Wayne County area, development of the prolific Sims pool during the first half of the year has been an important factor in preventing

(Continued on Page 123)

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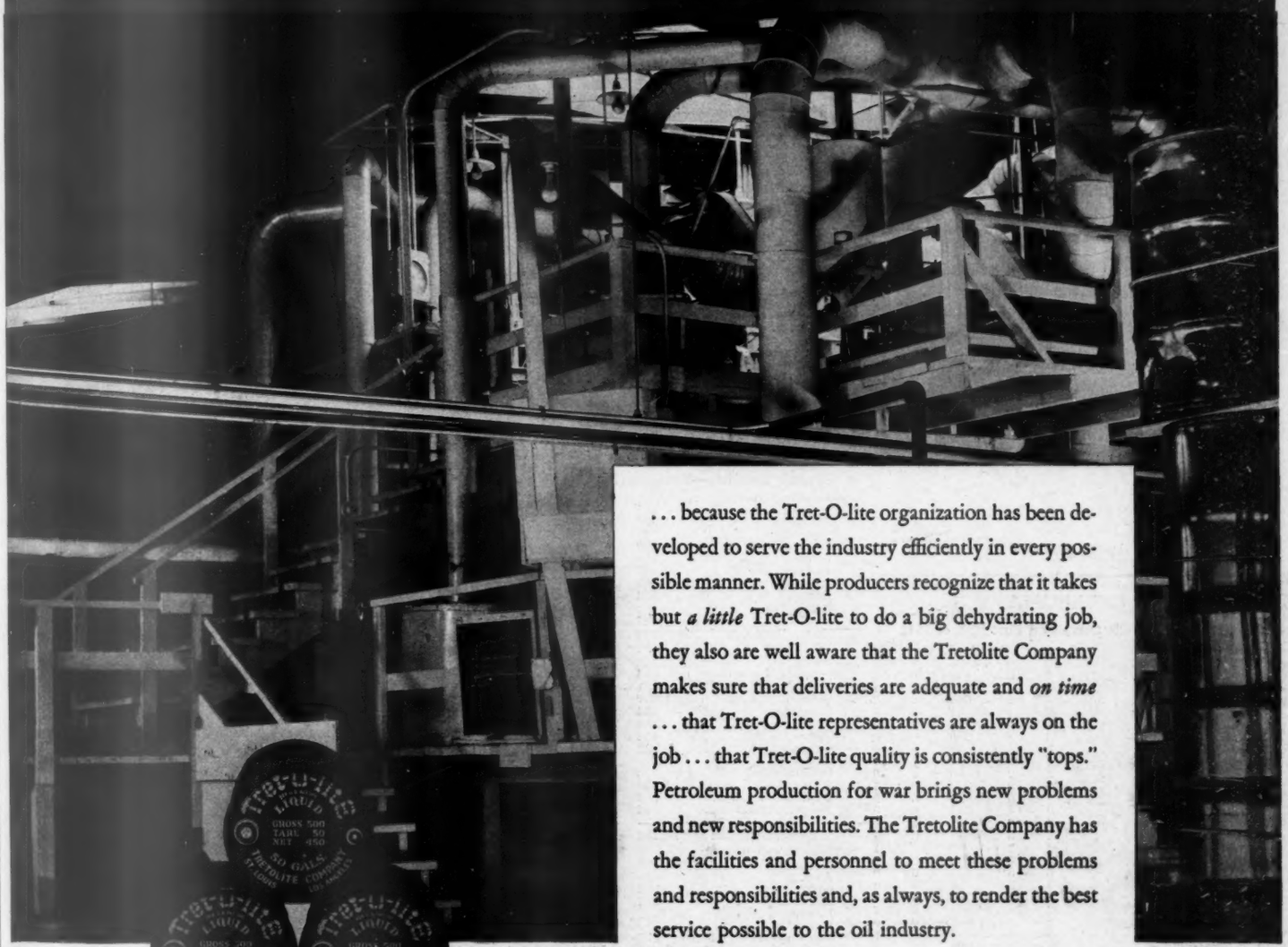

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DEHYDRATING DESALTING

PAUL'S VALLEY FIND OPENS LARGE PROSPECTIVE AREA

By CARL HOOT

THE number of wells drilled in Oklahoma has dropped steadily from the first of the year, when monthly completions were around 150 to the present of 85 (June). The ratio of oil wells to total completions for the three 6-month periods, starting with first half of 1941, was 57, 60 and 47 per cent, respectively. This unimpressive record may be attributed to the greater number of wildcats being drilled now and to the 40-acre spacing rule which has reduced the number of locations in proven areas. The total of 628 wells drilled in 1942 is nearly 50 per cent less than for the same period a year ago and is 86 per cent less than the total completions for the last half of 1941.

Probably the most important oil strike in Oklahoma since the Apache and Hotulke pools, was the Pauls Valley Wilcox pool of Garvin County. Over the past several years a number of deep tests were drilled in Garvin County in an attempt to find production on the northern flank of the Arbuckle Mountains and in May 1942 Pure Oil Co. 1 Teter, SE SW NW 31-4n-1e, some 12 miles northwest of the town of Pauls Valley, found pay sand at 3,900-6 ft. and flowed 397 bbl. in 4 hours. It was Pure's third test for the area. By the end of June, 2, 3 and 4 Teter were brought in, offsetting the discovery well on the north, east and south. Two wells on the south and southwest were running low with water in the

OKLAHOMA

Summary of Wells Completed First Half of 1942

Pool—	Comp.	Oil	Prod.	Gas	Dry
Apache	16	15	43,433	0	1
Beebe and N.	5	3	559	0	2
Brooksville	3	2	684	0	1
Byars	4	2	642	0	2
Cement	6	1	41	4	1
Chickasha	4	0	0	2	2
Crescent	3	3	1,393	0	0
Cromwell	5	4	92	0	1
Cumberland	2	1	196	1	0
Dill	2	2	30	0	0
Dilworth	9	8	374	0	1
Earlsboro	8	6	1,346	0	2
Empire	7	4	277	0	3
Garber	4	3	122	1	0
Guthrie	4	3	1,047	0	1
Hewitt	4	3	380	0	1
Hotulke	22	19	4,536	0	3
Hotulke, West	6	6	3,332	0	0
Loco, West	7	3	96	0	4
Navina	2	2	564	0	0
Oklahoma City	23	16	4,564	0	7
Pauls Valley	3	3	1,343	0	0
Sasakwa	5	4	59	0	1
St. Louis district	21	17	4,080	0	4
Tecumseh	1	0	0	0	1
Tecumseh, East	2	2	432	0	0
Tussy	4	2	360	0	2
Tonkawa	3	1	24	0	2
Velma	8	6	62	1	1
Woolsey	4	3	965	0	1
Miscellaneous counties:					
Creek	52	32	1,304	4	16
Garfield	2	1	248	0	1
LeFlore	4	0	0	3	1
Muskogee	8	3	50	0	5
Okfuskee	18	8	233	1	9
Okmulgee	31	13	211	6	12
Osage	42	16	542	3	23
Pawnee	8	4	215	1	3
Pontotoc	5	2	100	0	3
Others	116	49	7,726	13	54
Total fields	483	272	81,672	40	171
Wildcats	145	23	9,583	7	115
Total completions	628	295	91,255	47	286

Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	142	73	11	58	441,056
February	116	53	15	48	395,911
March	99	44	7	48	284,808
April	98	40	8	50	312,094
May	88	42	4	42	287,840
June	85	43	2	40	296,212
First half 1942	628	295	47	286	2,017,921
First half 1941	939	537	89	313	2,193,403
Difference	311	242	42	27	175,482

PRODUCTION 1939-1942

(In thousands of barrels)

OKLAHOMA

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Northeastern district:											
Washington County	642	602	603	627	626	769	578	4,854	4,648	4,596	4,520
Nowata County	2,277	2,071	2,111	2,182	2,119	1,876	1,861	7,507	7,473	7,403	7,328
Rogers County	373	393	359	403	393	518	423	3,478	3,452	3,460	3,407
Osage and Eastern Kay counties:											
Burbank	1,394	1,295	1,348	1,490	1,576	1,706	1,561	1,928	1,702	1,696	1,697
So. Burbank	1,688	1,462	1,551	1,376	1,306	1,474	1,296	245	239	224	223
Naval Reserve	773	665	683	605	556	533	474	237	238	234	233
Other Osage	2,367	2,258	2,352	2,264	2,401	2,642	2,689	6,363	6,153	6,022	5,871
Total Osage	6,222	5,680	5,934	5,735	5,839	6,355	6,020	8,773	8,332	8,176	8,024
Total N.E. Okla.	9,514	8,746	9,007	8,947	8,977	9,518	8,882	24,612	23,905	23,635	23,279
East Central district:											
Tulsa County	565	508	541	527	601	595	572	3,497	3,412	3,289	3,139
Wagoner County	132	122	132	152	134	127	119	464	488	486	490
Okmulgee County	796	681	802	751	715	699	655	2,209	2,167	2,104	2,040
Muskooge & McIntosh counties	146	134	142	140	125	138	120	569	543	502	515
E. Okfuskee County	388	374	539	648	684	580	573	387	412	421	419
Creek County:											
Bristow-Slick	1,231	1,172	1,118	1,084	1,065	886	1,028	1,351	1,213	1,148	1,129
Cushing-Shamrock	1,812	1,634	1,675	1,677	1,645	1,578	1,547	1,862	1,824	1,783	1,774
Glenn-Sapulpa	727	704	757	702	715	768	910	1,978	1,956	1,953	1,941
Manford-Olive	376	325	301	295	278	230	222	468	471	466	441
E. Stroud	.....	.....	.....	.....	.....	543	106	0	0	45	45
Other Creek	314	308	314	401	379	374	274	456	507	524	534
Total Creek	4,460	4,143	4,165	4,159	4,082	4,379	4,087	6,115	5,971	5,919	5,864
Total E.C. Okla.	6,487	5,962	6,321	6,377	6,341	6,518	6,126	13,241	12,993	12,721	12,467
Greater Seminole—Fitts district:											
Seminole County:											
Bethel & N	411	340	400	357	377	278	260	68	64	62	57
Bowlegs	1,520	1,158	1,268	1,196	1,123	1,011	969	244	233	210	209
Carr City	541	381	435	405	405	387	341	91	84	79	79
Cromwell & N, S	628	550	574	782	746	710	607	271	275	260	254
Dora	712	441	401	340	222	211	179	78	108	113	107
Earlsboro dist.	1,967	1,623	1,918	1,812	1,736	2,021	1,988	377	367	364	348
Keokuk	633	514	575	516	505	524	570	106	101	98	97
Konawa & E, W, S	374	282	409	356	586	659	377	119	138	158	166
Little River & E, W	1,587	1,278	1,457	1,418	1,473	1,231	1,139	341	319	315	308
Little River, N	.....	.....	.....	.....	31	107	86	0	0	5	5
Mission	281	205	237	223	234	215	191	73	66	63	62
Sasakwa & Sasakwa townsite	324	298	300	332	285	250	221	70	67	72	71
Searight & N, S	491	342	411	365	370	293	257	89	79	75	87
Seminole City	1,457	1,161	1,317	1,184	1,155	1,088	998	217	206	199	197
Seminole, E	254	192	226	221	177	152	150	98	97	93	89
Seminole, W	289	210	262	227	352	344	298	22	24	34	34
Wewoka dist.	404	343	314	294	266	391	287	146	132	127	128
Grayson	222	246	209	170	155	127	108	34	35	32	33
Traugh	239	169	126	102	111	101	77	40	39	38	38
Rosanna	56	56	128	72	65	55	47	15	20	20	20
Allen dist.	1,158	1,132	1,075	990	893	887	766	491	506	507	494
Fish & W	733	643	593	559	615	745	515	118	134	143	142
Miscellaneous	172	116	119	117	289	387	320	68	77	71	75
Total Seminole	14,483	11,680	12,722	11,989	12,171	12,174	10,751	3,176	3,171	3,138	3,100
Pottawatomie County:											
Asher & W	70	65	61	61	60	61	62	42	41	40	38
Avoca	85	99	182	186	251	368	132	2	10	18	17
Gray	155	138	141	156	140	169	168	23	27	23	26
Maud & S	173	101	108	96	120	390	215	62	57	66	67
Prague	.....	.....	.....	159	233	164	120	0	12	14	14
Romulus	.....	.....	.....	88	464	356	186	0	3	17	22
Shawnee & N, E	173	240	381	428	239	234	210	24	58	58	52
St. Louis & N, E	6,058	5,244	5,204	4,126	3,363	3,634	3,003	742	890	902	893
Tecumseh Lake	.....	.....	.....	.....	118	368	306	0	0	12	12
Hotulke & W	.....	.....	.....	.....	.....	189	786	0	0	17	22
E. Tecumseh	.....	.....	.....	.....	.....	320	138	0	0	7	10
Brooksville	.....	.....	.....	.....	.....	.....	38	0	0	0	7
Miscellaneous	62	131	279	144	151	165	183	17	19	24	24
Total	6,776	6,018	6,356	5,444	5,139	6,418	5,547	912	1,117	1,198	1,198
Okfuskee County:											
Crowell, E	.....	.....	90	206	481	922	858	0	19	58	62
Dill & S	197	162	177	458	1,021	405	286	33	49	88	90
Olympic	588	446	401	338	264	234	257	344	332	334	324
Rusk	.....	.....	.....	.....	.....	116	264	0	0	7	8
Miscellaneous	.....	.....	.....	.....	.....	.....	155	0	0	0	27
Total	785	608	668	1,002	1,766	1,727	1,820	377	400	485	511
Hughes County:											
Adams	161	106	135	135	132	133	121	10	10	10	10
Holdenville	148	126	128	123	118	108	98	146	140	122	114
Papoose	126	110	117	112	107	105	96	58	58	49	48
Miscellaneous	.....	.....	.....	.....	.....	.....	145	0	0	0	0
Total	435	342	380	370	357	346	460	214	208	181	172
McClain County:											
Byars	.....	.....	257	29	21	23	88	0	10	5	8
Pontotoc County:											
Bebee & E	512	493	855	973	983	543	579	179	246	251	248
Fitts & N	5,303	3,817	3,423	2,823	2,242	1,981	1,706	454	866	785	764
Jesse	446	367	399	382	326	483	312	64	66	42	34
Miscellaneous	50	70	75	62	64	56	52	0	0	0	41
Total	6,311	4,747	4,752	4,240	3,615	3,063	2,649	697	1,178	1,078	1,087

(Continued on next page)

sand, while Mid-Continent's 1 Campbell, a west offset, had favorable showings. As the first half of the year drew to a close, the trend appeared to be more favorable to the east of the discovery well.

Pottawatomie County Active

The most active areas in the state were the Hotulke and West Hotulke pools of Pottawatomie County. Twenty-eight completions with only 3 dry holes made an almost perfect record. Discovered in May and July, 1941, an intensive drilling campaign has united the two fields which now cover approximately 8 sq. miles. Production is from Viola lime, Hunton and the second Wilcox. Pottawatomie County also contributed three other new areas. These were the Brooksville pool, 1 mile east of Tecumseh, which had four wells producing from Hunton and one dry hole at the end of June; the Centerpoint pool, discovered by C. W. Sharp 1 Wells, NE SE SE 1-9n-2e, which produced 223 bbl. from Simpson dolomite topped at 5,630 ft. and the McComb pool, just southeast of the town of the same name, opened by Atlantic Refining Co. 1 Hamil, NE SW 27-8n-3e, which flowed 151 bbl. in 11 hours from Hunton at 4,598-4,795 ft.

The Apache pool of Caddo County continued its southeast-northwest trend. From January to June, 16 wells were added to the field and potentials were still running as high as 10,000 bbl. a day. Texas 6 Mulkahay, NE SE SE 2-5n-12w, located on the northern edge of the southeast tip of the field, was the first dry hole. It topped sand at 4,860 ft. and had total depth at 5,607 ft.

Navina Another Link Along Granite Ridge

Production has been found at almost regular intervals all along the Nemaha granite ridge which extends from El Dorado, Kansas, to the Arbuckle Mountains, including Garber, Oklahoma City, Crescent and Moore. Early this year the Navina pool, midway between Crescent and Logan in Logan and Oklahoma counties, was opened by Cities Service Oil Co. 1 Babcock, SE NE NE 10-15-4w. The well was drilled to the second Wilcox, which was dry, at 6,800 ft. and then plugged back to Layton sand found at 5,010-43 ft. It was completed for an initial flow of 200 bbl. of oil a day. By the end of June Cities Service had completed two additional wells offsetting the discovery, each of which made a greater flow than the first well, producing from approximately the same level. Also, both wells were drilled to the second Wilcox and then plugged back to produce from the Layton zone.

Discovery of production between the Crescent and Logan pools leaves two remaining gaps along this ridge. These are between Thomas and Barnes in Garfield County and between Moore and Noble in Cleveland County. As a further indication that production may be found on the same structure all along the ridge, by the end of June Gulf Oil Corp.'s wildcat in NE NE 20-16-4w. half way between Crescent and Navina, had found oil in Layton sand at 5,220 ft. but was going on to the second Wilcox.

ILLINOIS

(Continued from Page 120)

an even more rapid decline in the state's production. The Sims pool was discovered in the latter part of 1941 but development did not get under way until this year. Although this development has been slow, it has been steady and the field now has nearly 40 producing wells.

The Wabash River area, which for nearly 2 years has been the most actively explored and developed area in the state and which during 1941 yielded the majority of the new fields, has been nearly void of discoveries and has received relatively little development so far this year. Possibilities of this area, however, are exceptionally good and it will probably yield a large number of Illinois' future fields.

Discoveries throughout the remainder of the state, although numerous, have been insignificant from a production standpoint and have not been actively developed. Legislation underway at the present time, if successful, will permit more dense development of these and other pools and will permit more rapid development of all pools once they are discovered. That most operators are confident of such success is evidenced by an upward trend in active operations during the latter part of June and the resumption of wildcatting by many of the major companies which have been inactive in this field since the first of the year.

OKLAHOMA

Summary of Wildcats Completed First Half of 1942

County—	Comp.	Oil	Prod.	Gas	Dry
Caddo	2	0	0	0	2
Carter	3	0	0	0	3
Comanche	3	0	0	0	3
Cotton	2	0	0	0	2
Creek	4	2	125	0	2
Garvin	2	1	397	0	1
Hughes	6	0	0	1	5
Jefferson	5	0	0	0	5
Kay	7	1	68	0	6
Kiowa	5	0	0	0	5
Lincoln	14	1	35	0	13
Logan	3	1	364	0	2
Marshall	3	1	2,496	0	2
McIntosh	2	0	0	1	1
Muskogee	3	0	0	0	3
Noble	2	2	1,740	0	0
Okfuskee	13	3	131	1	9
Oklahoma	2	1	40	0	1
Osage	8	0	0	0	8
Pawnee	2	1	2,582	0	1
Payne	9	3	207	0	6
Pontotoc	3	0	0	0	3
Pottawatomie	9	3	1,145	0	6
Seminole	12	2	175	0	10
Stephens	8	1	78	0	7
Others	13	0	0	4	9
Total	145	23	9,583	7	115

OKLAHOMA (continued)

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Coal County	50	134	42	15	15	17	16	5	5	6	7
Total district	28,840	23,529	25,177	23,089	23,084	23,768	21,331	5,381	6,089	6,091	6,083
North Central district:											
Garfield, Grant, Kay, Noble and Logan counties:											
Blackwell district	177	129	142	131	132	97	95	175	157	149	144
Billings	1,131	1,047	1,079	1,131	1,110	1,166	1,115	61	85	94	84
Braman, N & SE	298	256	251	255	251	254	225	99	94	91	76
Crescent	577	406	411	358	307	269	240	50	41	34	34
Dilworth	79	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Garber	339	319	312	320	307	313	308	582	572	563	541
Guthrie	.....	.....	.....	.....	170	583	654	0	0	28	32
Lucien	1,656	1,361	1,464	1,286	1,041	1,026	874	121	123	122	119
Lucien, N & NE	140	112	131	104	58	57	72	8	12	12	15
Navina	.....	.....	.....	.....	.....	.....	26	0	0	0	3
Polo	245	183	210	177	161	141	127	33	32	28	28
Tonkawa	364	315	312	311	314	318	290	376	212	189	180
Miscellaneous	561	637	626	735	619	897	648	220	230	181	170
Total N. Cent. district	5,567	4,765	4,938	4,808	4,470	5,121	4,714	1,725	1,558	1,491	1,462
Central district:											
Payne, Pawnee and Lincoln counties:											
Chandler & Hoyt	294	227	206	196	191	132	132	66	61	57	49
Coyle	115	270	307	330	716	751	606	1	32	35	34
Ramsey	652	836	709	668	719	830	822	17	38	42	42
Sac and Fox	644	469	413	274	225	176	136	75	140	141	141
Yale dist., Maramec & Jennings	688	569	550	487	515	488	387	578	511	519	501
Cleveland-Keystone	180	199	160	142	148	140	146	520	490	470	445
Lauderdale	165	157	151	143	131	117	112	215	198	188	183
Laffoon	104	114	134	115	112	111	109	8	11	12	13
Wellston, N	138	192	77	44	38	35	32	30	22	21	19
Davenport, N & W	89	79	84	86	92	106	125	120	119	122	125
Perkins	.....	.....	41	68	43	25	18	0	3	4	4
Stroud-Kellyville	86	70	81	89	92	89	91	45	42	40	38
Wilzetta & S	80	94	118	80	70	59	53	10	15	16	16
Watchorn	55	51	68	74	71	79	92	17	17	16	16
Miscellaneous	221	308	413	454	355	305	701	130	194	177	170
Total	3,511	3,635	3,512	3,250	3,518	3,443	3,562	1,827	1,893	1,860	1,796
Oklahoma, Cleveland, West McClain counties:											
Britton & S	135	125	142	110	87	91	71	28	31	29	26
Edmond & NE	921	754	780	908	629	595	545	96	89	83	89
Moore	577	423	356	243	196	131	147	39	38	32	32
Oklahoma City	19,032	16,697	17,920	18,051	16,320	15,864	13,985	1,045	1,009	900	818
Miscellaneous	28	18	20	52	57	80	90	5	7	11	12
Total	20,693	18,017	19,218	19,364	17,289	16,761	14,838	1,213	1,166	1,055	977
Total Central district	24,204	21,652	22,730	22,614	20,807	20,204	18,400	3,040	3,059	2,915	2,773
West Central (Anadarko) district:											
Caddo and Kiowa counties:											
Apache	.....	.....	.....	.....	.....	274	654	0	0	8	22
Cement	836	990	1,204	1,265	1,326	2,028	2,105	252	321	325	327
Hobart	6	44	8	3	287	597	259	0	10	30	30
Total W. Cent. district	842	1,034	1,212	1,268	1,613	2,899	3,018	252	331	363	379
South Central district:											
Bryan, Marshall and Love counties:											
Cumberland	.....	.....	19	385	1,092	1,451	1,060	0	16	42	46
Miscellaneous	31	27	29	32	28	26	30	167	162	159	150
Total S. Cent. district	31	27	48	417	1,120	1,477	1,090	167	178	201	196
Southwestern district:											
Carter, Comanche, Cotton, Garvin, Grady and Stephens counties											
Duncan dist.	442	459	522	525	547	568	592	498	494	505	515
Graham-Fox	611	435	486	448	397	448	337	436	417	361	350
Healdton	1,659	1,578	1,614	1,563	1,560	1,526	1,492	1,943	1,907	1,898	1,896
Hewitt & W	698	664	700	1,078	1,769	3,091	1,920	764	798	916	890
Knox	316	280	365	353	335	309	275	152	169	177	175
Loco & W, Milroy	111	84	134	132	141	140	140	211	206	206	213
Pauls Valley	.....	.....	.....	.....	.....	.....	54	0	0	0	4
Robberson	200	176	176	126	161	158	153	195	176	176	176
Sholem-Alechem	459	485	518	484	464	438	428	328	319	315	310
Tatums-Tussy	338	418	363	803	990	844	833	307	303	317	322
Velma	148	135	129	137	138	158	195	617	627	646	652
Wilcat Jim	111	77	83	85	83	85	82	88	88	88	88
Walters	183	170	166	167	151	152	136	256	248	243	239
Miscellaneous	211	222	171	188	188	178	175	398	401	403	421
Total	5,487	5,183	5,428	6,089	6,924	8,095	6,749	6,793	6,153	6,251	6,257
Jefferson, Jackson and Tillman counties:											
Altus	233	345	371	358	309	248	123	65	148	154	115
Tipton							87				83
Oscar							217				191
Seay	212	344	358	330	310	291	8	273	275	274	49
Spring							91				38
Frederick & W	256	240	271	351	428	645	326	99	111	113	57
Red River							51				90
Total	701	829	1,000	1,039	1,047	1,184	903	437	534	541	573
Total Southwestern dist.	6,188	6,012	6,428	7,128	7,971	9,279	7,652	7,230	6,687	6,792	6,830
Total Oklahoma	81,673	71,727	75,861	73,748	74,383	78,784	71,213	55,648	54,800	54,209	53,469

BLACK OAK MAY START PALUXY PLAY IN MIDDLE OF BASIN

By
ROBERT INGRAM

OF three new pools opened in East Texas in the first half of 1942, none had been proved of immediate major importance by the end of June. In fact, one of them, the Concord, low-gravity pool opened by Magnolia Petroleum Co. 1 W. C. Campbell, 4 miles northeast of Montalba, was offset 1,500 ft. to the southwest with a dry hole, had a second dry hole 1 mile to the northwest, and had no other wells drilled.

The Club Lake pool, opened in May by Hollandsworth Drilling Co. near the community of Club Lake in Hunt County, was a Woodbine sand discovery which started a drilling boom that seemed doomed to a short life. Two additional oil wells were drilled, but at least one and probably two dry holes were drilled in a fault condition west of the discovery, and an outpost 2 miles southwest of the discovery was also abandoned.

The third discovery, the Black Oak pool in Wood County opened near the town of Coke by Amerada Petroleum Co. 1 Kennemer, could hardly be evaluated as only one other well had gone into the pay and that apparently would make a good well. However, the pay section at Black Oak is Paluxy sand, the first in the Tyler Woodbine basin south of the fault system.

Opening of production in the Paluxy was hardly unexpected in view of distillate pay at Chapel Hill and other eastern Texas fields, but wildcatters were given the first assurance by this well of the possibility of success in the basin structures in this deep zone.

Throughout most of the first part of the year, chief interest in East Texas was in the search for the Smackover shore line on the west side. This search had been under way sporadically since 1936 when it was first generally known that such a shore line probably existed in the basin and had excellent prospects of being productive in stratigraphic traps.

A wave of leasing spread over the area during this spring when Smackover production was found north of the fault system at Midway in southern Arkansas (an extension of the basin) and hundreds of thousands of acres were taken up largely along a line that would follow the course of the Balcones fault system but a little to the west and north.

The Texas Co. drilled a wildcat in Limestone County east of the probable shore line, found no oil but added much to geological information available about the Smackover, and other similar tests were either under way or in the making.

Field drilling was confined largely to Hawkins, where 95 new wells in 6 months brought the drilling campaign near a close with a total of 324 producing wells, and Chapel Hill where 14 new wells were drilled and production was opened in the Rodessa section at about 500 ft. higher than the regular 8,200-ft. pay.

PRODUCTION 1939-1942

(In thousands of barrels)

EASTERN TEXAS

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
East Texas Basin:											
Boggy Creek	51	56	51	38	37	38	37	19	18	17	16
Cayuga	1,343	1,996	1,788	2,036	2,143	2,068	2,058	253	274	284	282
Chapel Hill	.....	.....	13	22	65	85	142	0	9	15	25
East Texas	71,342	75,628	71,857	68,288	65,243	65,396	57,641	25,815	25,922	25,784	25,557
Hawkins	.....	.....	.....	.....	207	1,223	2,190	0	0	240	324
Long Lake & E.	428	394	399	252	589	729	646	74	111	150	147
Navarro Crossing	90	97	121	57	81	105	80	0	20	21	21
Pittsburg	.....	.....	.....	11	14	19	36	0	1	2	5
Pleasant Grove	.....	.....	.....	.....	.....	17	30	0	0	5	7
Van	2,564	2,728	2,643	1,776	1,895	1,802	1,584	587	588	584	581
Miscellaneous	31	23	39	64	37	30	44	8	7	5	7
Total	75,849	80,922	76,911	75,544	70,311	71,418	64,488	26,761	26,950	27,108	26,972
Mexia fault zone:											
Bazzette	.....	9	49	53	26	24	18	0	3	7	7
Coriscana	76	76	75	77	69	74	69	621	630	616	605
Currie	19	19	18	19	18	17	18	13	13	14	14
Flag Lake	93	61	62	62	40	34	28	15	16	11	10
Mexia	307	302	289	275	281	274	288	244	217	214	210
Powell	346	344	321	306	301	284	284	168	145	146	145
Wortham	14	15	18	17	64	99	88	9	12	30	31
Miscellaneous	9	10	4	14	17	18	13	4	5	7	7
Total	864	836	836	822	816	824	806	1,074	1,041	1,045	1,036
Talco fault zone:											
Sulphur Bluff	816	653	733	774	786	696	773	73	73	73	73
Talco	5,431	4,194	4,280	4,441	4,074	4,928	4,842	689	725	757	752
Total	6,247	4,853	5,013	5,215	4,860	5,624	5,615	762	798	830	825
Sabine uplift:											
Caddo	.....	7	38	77	60	44	32	0	35	38	34
Potter	16	13	12	11	13	16	13	32	28	29	25
Rodessa	5,222	4,550	3,859	2,543	2,606	1,957	1,672	481	500	463	307
Waskom	11	11	10	10	7	7	6	20	20	21	21
Miscellaneous	7	3	5	2	.....	.....	.....	4	0	2	0
Total	5,256	4,584	3,924	2,643	2,686	2,024	1,723	537	583	553	387
Southern district:											
Trinity	97	73	64	55	61	76	74	13	22	23	15
Miscellaneous	16	21	14	15	11	14	9	72	76	73	70
Total	113	94	78	70	72	82	83	85	98	96	85
Total E. Texas	88,329	91,289	86,762	81,294	78,745	79,972	72,715	29,219	29,470	29,632	29,305

EAST TEXAS

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Bazzett	1	0	0	0	1
Black Oak*	1	1	320	0	0
Cayuga	1	1	209	0	0
Chalk Hill	1	0	0	0	1
Chapel Hill	14	14	4,184	0	0
Concord*	2	1	201	0	1
East Long Lake	1	1	49	0	0
East Texas field (Joiner)	2	2	58	0	0
East Texas field (Longview)	4	2	116	0	2
Flag Lake	1	0	0	1	0
Grapeland	1	0	0	1	0
Hawkins	95	91	16,950	1	3
Long Lake	5	4	313	1	0
Opelika	2	0	0	2	0
Pittsburgh	2	2	225	0	0
Pleasant Grove	7	3	704	0	4
Powell	2	1	25	0	1
Talco	2	2	238	0	0
Van	2	1	672	0	1
Wortham	1	1	56	0	0
Wildcats	52	0	0	3	49
Total	199	127	24,320	9	63

*Discovery.

Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	57	36	3	18	259,675
February	35	21	4	10	159,450
March	34	24	0	10	156,266
April	27	18	1	8	147,001
May	31	19	1	11	134,282
June	15	9	0	6	80,067
First half 1942	199	127	9	63	936,741

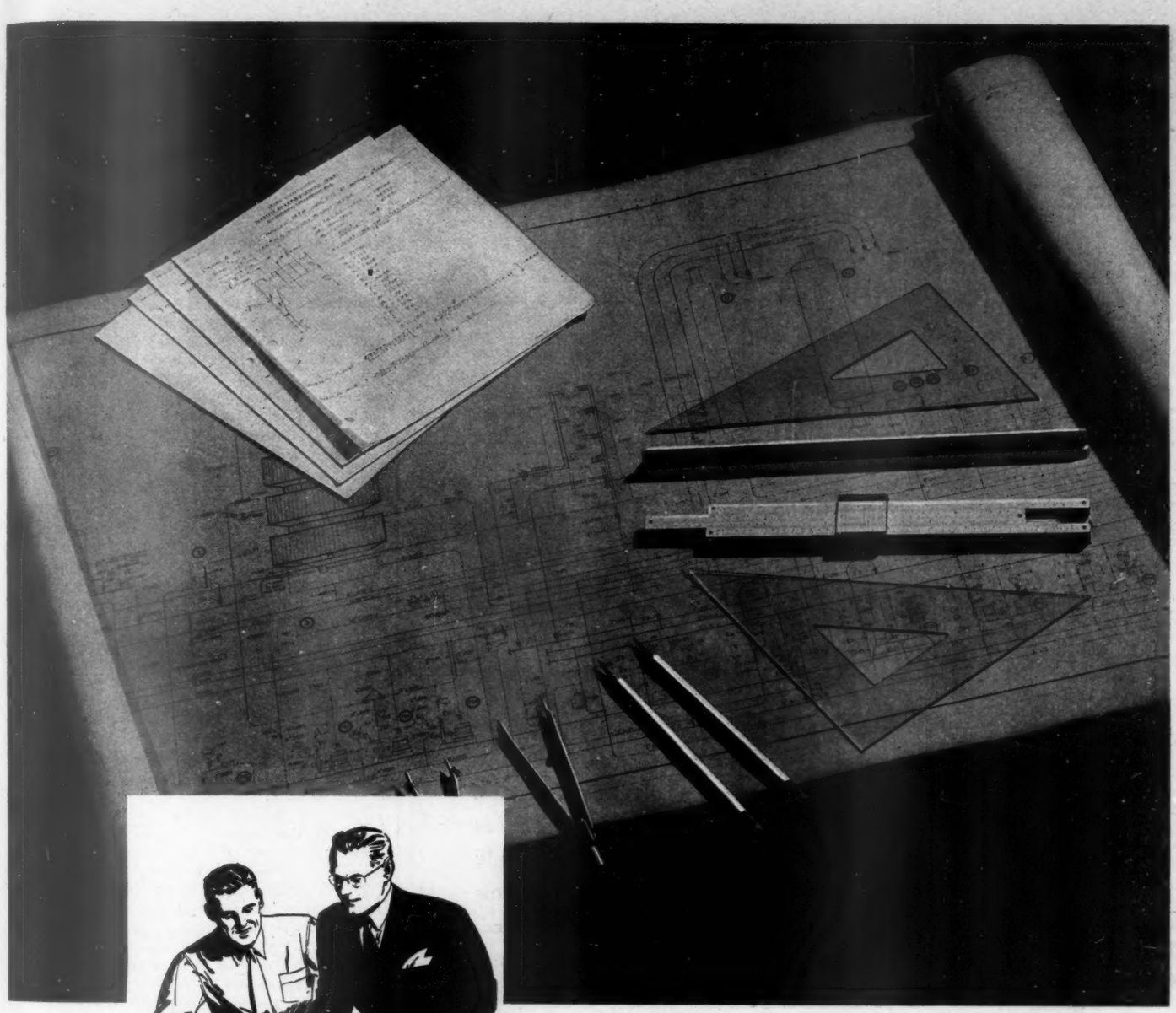
CALIFORNIA

(Continued from Page 96)

grades of crude oil have been exempted from curtailment or given maximum allotments.

One gas field, Bowerbank in Kern County, was discovered in 1942 although drilling operations in this region extended over from 1941. Texas Co took over a deep well drilled by Union Oil Co. at Bowerbank and later succeeded in developing commercial gas production after plugging the hole back to the Mya gas zone of Pliocene age. In the meantime, but on the basis of its findings in the old Union wildcat. Texas Co. succeeded in completing 47-15 S.P. flowing 5,000,000 cu. ft of gas daily from 4,253-62 ft. This latter well was originally drilled to 12,138 ft. but was plugged back to 4,271 ft. prior to being completed in the Mya gas rone. Three commercial gas wells have been completed in the Bowerbank gas field up to the present time but because of the limitation of one well to 640 acres in gas fields the outer limits of the field remain to be determined in all directions.

Deeper drilling and extension work in the Elk Hills and Newhall Potrero fields resulted in increased crude-oil reserves for each area but the real importance of each remains to be determined by additional drilling. Discovery of Stevens zone production in the Elk Hills field in 1941 is of prime importance as this Miocene zone may be found to be a very large reserve. Some additional development of the Stevens zone at Elk Hills was undertaken during 1942 but the areal extent of the zone has not been definitely determined. If it extends over the entire productive area of Elk Hills it may become one of the state's largest reserves. Development work at Elk Hills has been along conservative lines and no change is anticipated although a smaller amount of drilling may be done during the next 6 months. In addition to proving up the existence of Stevens zone production at Elk Hills, Standard Oil Co. has extended the productive limits of the upper or Pliocene zones so that in the final analysis the reserve of this field has been substantially increased. Pending the drilling of additional deep wells, the extent of the Stevens sand must remain conjectural but recent developments indicate it may prove very large. In the Newhall Potrero field of Los Angeles County, Barnsdall Oil Co. drilled a well south of a crossfault and proved an additional 400 acres in the Modelo.



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Exploration Blankets Wide Area in Western Provinces

By VICTOR LAURISTON

DESPITE the continued predominance of Turner Valley in both drilling and production, the trend of development in western Canada during the past 6 months has shown a decided reversal. Where, almost continuously since 1924, the superior attractions of Turner Valley made it difficult to finance operations in less encouraging fields, now strong efforts are being made to develop wildcat areas and to extend other areas which have so far shown only small production.

This reversal is a direct outcome of the war, and, especially, of the resulting gasoline shortage. Canada, heretofore relying comfortably on imports of crude from the United States, Trinidad, and South American fields, now is compelled to make the most of its own oil resources even to the extent of undertaking developments previously considered commercially unprofitable.

This trend has been stimulated by an incidental war development, the Alaska Highway, which, traversing the Canadian North, has rendered more accessible some potential fields where transportation difficulties and high costs had discouraged more than local development.

Work in these remote areas, as well as in wildcat areas less remote, is being actively encouraged by the federal government, which is granting tax concessions and other forms of assistance, with a view to increasing Canada's known and available petroleum resources as rapidly as possible in order to meet the current emergency.

Three important areas are affected by the opening of the Alaska Highway, which is expected not merely to provide facilities for moving in drilling equipment and taking out the product, but whose traffic is counted on to absorb large quantities of petroleum products.

Fort Norman Oil Field

The most northerly of these fields, and the world's most northerly oil field, is Fort Norman, on the Mackenzie River, where the discovery well was drilled by Imperial Oil in 1920. Here production comes from the Fort Creek shales in the Upper Devonian; where the discovery well encountered a reputed flow of 100 bbl. daily at 783 ft. Later, owing to declining production, it was deepened to 951 ft., and ultimately to 1,025 ft. Early drilling at a distance from the discovery resulted in two dry holes and one small gasser; then a well 150 ft. from No. 1 got 110 bbl. from 936-1,063 ft. Since then a third producer, also close in, has been drilled. For some years after the early drilling the wells were shut in; later Imperial Oil erected a small refinery to supply the requirements of northern navigation. This plant has since been expanded to meet the demands of the Great Bear Lake mining area. Heretofore, the plant has been operated only in the summer months.

The producing wells are closely grouped, and neither the proven area nor the actual production seem sufficient to justify a suggested pipe line to White Horse, in the Yukon Territory, or a refinery at that point. The obvious immediate step is intensive testing of the potential field, and the much larger drilling crews, and the additional equipment, moved north this spring indicate that Imperial Oil, with the support of the federal government, is undertaking extensive development.

While oil has been proven only in the immediate area, 53 miles below Fort Norman seepages and shale beds are known both on the upper Mackenzie River, and in the vicinity of Great Slave Lake, where one or two unsuccessful tests were drilled about 20 years ago. The drilling so far done has been totally inadequate for so large an area.

The pipe line, and the White Horse refinery, will depend on the results of the early drilling at Fort Norman. White Horse is strategically situated for such an enterprise, with a highway to Dawson, and the Yukon River providing water transportation to connect with the Alaska Highway.

The second area is the Peace River block of northern British Columbia, long regarded by geologists as a potential field, and for some years reserved from private prospecting by the British Columbia provincial government, which planned to create a publicly owned oil enterprise and drilled one contract well, at Commotion Creek, to more than 5,000 ft. The area is geologically related to the foothills belt east of the Rocky Mountains, on which, hundreds of miles farther south, the Turner Valley field is located; and similar structural conditions are indicated, necessitating deep drilling. The federal government has accepted an offer of the British Columbia provincial

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government of the oil resources of the area, free of taxes and royalties, for the duration of the war and 6 months thereafter: and has detailed geological crews to investigate the territory, and will sponsor additional drilling.

Two Alberta areas related to the Peace River block are potentially oil bearing. To the east, the Pouce Coupe structure is being tested by private enterprise. Intermittent drilling in the past 20 years has resulted in one large gasser, 10,000,000 cu. ft., drilled by the Northwest Co., and in numerous oil and gas shows in later wells, one of which is now preparing to test at 1,700 ft. The structure is believed an extensive dome. Still farther east is the Peace River field, at one time very active. It is located in the Peace River flats. More than a dozen wells encountered low-grade crude in apparently commercial quantities, but were drowned out by enormous flows of salt water. The structure is a slightly tilted monocline, with possibilities of commercial production in local folds.

Athabaska Tar Sands

The third area is the tar-sand district on the Athabaska, reputed the largest known oil deposit in the world. Upwards of 30,000 sq. miles are underlain by bituminous sands of the Lower Cretaceous, corresponding geologically to the oil-bearing formations of the Wainwright and Vermilion fields in Alberta. The sands are estimated to contain as much as 250,000,000,000 bbl. of oil. Most of the area is covered by heavy overburden, but for some 60 miles upstream, commencing a short distance above McMurray, the sands are exposed, in area up to 20 sq. miles with a potential reserve of 500,000,000 to 1,000,000,000 bbl. of crude oil.

Researches by federal and provincial governments showed the physical feasibility of separating the bitumen from the sands, and in recent years operators have concentrated on the problem of reducing the processes involved to an economic basis. In 1922 the International Bitumen Co., in a plant at Bitumont, produced fuel oil and asphalt on a commercial basis, but operations were ultimately discontinued. Last year, after more than 10 years of research and experiment, Abasand Oils began the operation of a small commercial plant at Horse River, 2½ miles above McMurray. Between May and November 1941, this plant produced substantial quantities of gasoline, diesel and fuel oil, and coke. It was partially destroyed by fire: but has since been reconstructed on a larger scale, with a capacity of 600 tons of sand daily, representing a potential recovery up to 540 bbl. of oil.

At the instance of the federal government, a special committee recently inspected the field, and made a preliminary report on the possibility of large-scale development. Active in the work of this committee, and of a subcommittee later named for more detailed study of the problem, is W. S. Kirkpatrick of the Consolidated Mining & Smelting Corp., a company with wide experience in mining operations as well as in reduction processes.

One of the problems of tar-sand utilization is to reduce the cost of mining the sands, as well as of the subsequent separation and refining processes. The existing local plant can economically cater to northern demands for petroleum products, but with reduced costs, with a pipe line to Edmonton and a refinery there, it would be possible to produce on a far larger scale to meet outside requirements. This is what the federal government is seeking to achieve.

So far, operations have been limited to mining and treatment of tar-sand exposures, where a recovery of 0.9 bbl. to the ton has been demonstrated. There remains the possibility of securing free low-grade oil by drilling at a distance from the outcrops, and the probability that, where the deposits are protected by a substantial overburden, the oil recovery may be sufficiently greater to more than offset the added costs of mining. Horizontal mining, or tunnelling from large shafts, may present possibilities.

Southern Alberta

In the older regions of Alberta, the half year has been marked by the preliminary stages of an extensive campaign to open new fields and extend areas which have already shown a small production. The federal government has encouraged these operations in certain specific cases by agreements for tax concessions, under which operators will be permitted to offset a portion of the survey and drilling costs against income taxes.

A feature of this development in the first 6 months of 1942 has been the definite shifting of activity from the foothill areas, long favored by wildcatters, to the eastern plains of Alberta. Another feature has been the active interest of large oil companies or affiliated groups.

Thus, Northwest Co., subsidiary of Imperial Oil, is seeking to extend the Vermilion field and is drilling on the Priddis and Jenner structures in Alberta and at Radville in southern Saskatchewan. McColl-Frontenac Oil Co. has drilled three dry holes near Monitor, in eastern Alberta. Standard Oil of British Columbia, after one unsuccessful test this year, has discontinued operations in the Steveville-Princess field; but has drilled one dry hole at Oyen, has a potential producer in the Taber field, an unfinished test at Eyremore, and is planning extensive survey work to be followed by drilling in the Ross Lake area of southern Alberta. Shell Exploration Co. is drilling at Castor, and starting tests in the Jumping Pound area west of Calgary and near Jasper Park.

The only new field definitely opened in Alberta has been near Tilley, in the plains area, where Northwest Co. finished an 80-bbl. producer, one gasser, and two dry holes, and is continuing development.

(Continued on Page 138)

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NORTHERN SECTOR DEVELOPMENT RAISES PRODUCTION

By OTTO C. PRESSPRICH

DESPITE the uncertainties created by the war, Michigan is entering the last 6 months of 1942 with expectations of intensive wildcat exploration and establishing new production records. Michigan oil production, on an upward trend since July of last year, is again nearing the high level reached in 1939. Production during the first half of 1942 totaled 10,296,000 bbl. as compared to 6,849,000 bbl. for the same period last year. This increase in production is due principally to development of the new Reed City and Headquarters fields which together produced more than 5,000,000 bbl. during the half year.

A total of 333 wells have been completed in Michigan so far this year including 178 oil wells and 28 gas wells. During the same period last year 399 tests were completed including 149 oil wells and 29 gas wells. The number of completions this year are certain to be less because of federal drilling restrictions. On the basis, however, of completions during the 6 months, reduction in the number of wells drilled may not be as great as was expected earlier in the year. The percentage of successful tests drilled, as has been the case so far during the year, will probably be greater than for previous years due to more cautious exploration brought about by wartime restrictions. Drilling in large undeveloped areas which have already been proved productive will also tend to increase the percentage of successful tests.

Reed City and Headquarters

The outcome of 1942 drilling at present appears to depend largely on discoveries and the availability of equipment. The slow start during the early part of 1941 was offset later in the year by such major discoveries as the Reed City and Headquarters fields. These two fields have accounted for the drilling of nearly 100 wells this year. Extensions to the Reed City field this year have added nearly 1,000 acres to the pool for future development. Present drilling restrictions, however, will limit the amount of additional development that can be done in these fields and the new 1942 discoveries will be left to bear the load of upholding activity in the state. Total discoveries so far this year consist of eight oil wells and two new producing horizons as compared to four oil discoveries, three gas discoveries and four new producing horizons discovered during the first half of last year. Two of the new discoveries at present indicate major fields while the remainder of them have been proved unimportant.

Of the new horizons discovered this year the Monroe in the Adams field of Arenac County appears equally important with any of the entirely new fields but from a long-range standpoint rather than immediate development or production. Only two offsets to the discovery have been completed in the Monroe in the Adams field and these have been small producers. The significance of the discovery, therefore, lies in its influence on deep drilling in the state rather than in additional oil reserves opened at Adams. Coupled with other deep drilling developments, the Adams deep well has encouraged deeper exploration throughout the entire north central basin area. No discoveries have yet resulted from this deep exploration but a few of the tests have either had shows or produced in some degree from the Monroe and future exploration of this horizon may result in many excellent fields.

Among the entirely new fields the Evart field of Osceola County at present looms as one of the best discoveries of 1942. Discovered early in the year, Evart was considered as a second-place discovery due to excitement over the discovery of the Riverside pool at about the same time. The Riverside play, however, was short-lived and hopes dwindled when offset wells to the discovery were found to be dry. Evart, on the other hand, got off to a slow start and little work was done in the field until recently. The second producer in this field has just been completed with a potential rating of 1,500 bbl. daily and oil operators in the state are now showing considerable interest in the area. The new location under way in the field indicates that development will be pushed to its maximum under the feasible limits of wartime operations.

Gas Field Development at High Peak

Natural-gas drilling in Michigan during 1914 is expected to equal that of last year when 97 producers were completed. Gas-well completions so far are equal to those of the first 6 months of last year. The Reed City field has yielded nearly half the 1942 gas completions and Clare County has received an intensive gas exploration and development campaign, yielding about one-fourth of the total completions. The major gas development companies are at the present planning one of the largest natural-gas exploration and development campaigns in the state's history and new discoveries might easily start additional development.

PRODUCTION 1939-1942

(In thousands of barrels)

MICHIGAN

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Northern district:											
Adams	29	26	22	301	582	541	517	12	25	31	49
Beaverton	31	26	24	72	82	72	63	23	22	25	31
Bentley	105	84	63	59	48	51	45	35	35	35	36
Buckeye	1,537	947	595	401	340	342	255	411	289	288	275
Clayton	408	282	229	207	163	118	98	50	51	50	45
Edenville	210	105	62	47	36	31	23	31	26	26	26
Freeman-Redding	2,207	2,683	2,397	2,099	1,203	766	502	38	145	144	130
Lincoln	.....	.....	.....	.....	.....	3	3	...	...	1	1
Ogemaw County	413	274	266	221	206	193	177	238	229	223	222
Reed City	.....	.....	.....	3	85	2,774	4,069	...	1	113	166
Roscommon County	.....	.....	.....	.....	.....	270	975	...	...	6	34
Sauble	.....	.....	.....	.....	.....	.....	4	0	0	0	1
Winterfield	.....	.....	.....	11	215	899	634	..	2	13	29
Total	4,940	4,427	3,658	3,421	2,960	6,060	7,365	838	825	955	1,045
Central district:											
Crystal-Wyman*	87	70	59	50	78	60	51	52	34	37	35
Greendale	283	252	232	223	210	209	191	220	177	176	176
Porter-Yost	1,040	922	889	882	782	746	664	387	340	337	336
Sherman	239	196	249	214	166	118	93	62	61	61	64
Vernon-Leaton	159	148	135	119	131	135	120	91	76	73	76
Wise	86	176	451	399	223	152	122	2	56	61	60
Total	1,894	1,764	2,015	1,887	1,590	1,428	1,241	814	744	745	747
Western district:											
Allegan County	1,115	1,674	1,421	1,288	812	628	591	212	516	552	488
Van Buren County	2,859	2,077	1,005	508	507	529	387	76	287	283	242
Walker	378	2,317	2,912	1,419	875	614	435	...	457	474	531
Miscellaneous	19	30	22	19	15	11	9	74	60	60	31
Total	4,371	6,098	5,360	3,234	2,209	1,782	1,422	362	1,320	1,369	1,292
Eastern district:											
Dundee	3	13	59	46	45	40	38	3	14	18	23
Monitor-Kawkawlin	.....	.....	.....	.....	30	150	206	0	0	8	39
Miscellaneous	24	29	27	26	15	16	24	81	83	83	92
Total	27	42	86	72	90	206	268	84	97	109	154
Total state	11,232	12,331	11,119	8,614	6,849	9,476	10,296	2,098	2,968	3,178	3,238

*Includes Amble

MICHIGAN

Summary of Wells Completed First Half of 1942

County—	Comp.	Oil	Prod.	Gas	Dry
Allegan	57	23	1,876	0	34
Arenac	13	6	8,274	1	6
Barry	1	0	0	0	1
Bay	13	12	3,150	0	1
Calhoun	2	0	0	1	1
Cass	2	0	0	0	2
Clare	40	18	20,765	8	14
Clinton	3	0	0	0	3
Genessee	2	0	0	0	2
Gladwin	6	4	616	0	2
Gratiot	2	0	0	0	2
Huron	1	0	0	0	1
Ingham	1	0	0	0	1
Isabella	5	3	1,778	0	2
Kent	7	1	10	1	5
Lake	15	10	3,391	0	5
Livingston	1	0	0	0	1
Macomb	1	0	0	0	1
Mason	1	0	0	0	1
Mecosta	3	0	0	0	3
Midland	1	0	0	0	1
Missaukee	7	1	329	0	6
Monroe	1	1	150	0	0
Montcalm	7	0	0	4	3
Muskegon	1	0	0	0	1
Newaygo	2	0	0	0	2
Oakland	1	0	0	0	1
Oceana	2	0	0	0	2
Osceola	72	53	145,227	13	6
Ottawa	9	4	299	0	5
Roscommon	23	22	34,836	9	1
St. Clair	1	0	0	0	1
Saginaw	2	0	0	0	2
Sanilas	1	0	0	0	1
Schoolcraft	1	0	0	0	1
Shiawassee	1	0	0	0	1
Tuscola	5	2	25	0	3
Van Buren	16	9	569	9	7
Wayne	1	1	5	0	0
Wexford	1	0	0	0	1
Miscellaneous	2	0	0	0	2
Total	333	170	221,210	28	135

Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	63	36	9	18	144,810
February	57	32	2	23	155,142
March	37	17	0	20	94,772
April	55	32	3	20	154,544
May	56	26	6	24	140,136
June	65	27	8	30	166,610
First half 1942	333	170	28	135	856,014

Small Fields Found in Posey And Other Southern Counties

WIDESPREAD wildcatting throughout Indiana during the first 6 months of 1942 again failed to uncover a single new field of major importance. Several discoveries were reported but most of the discovery wells were small and the fields have received no development. Although total completions continued on a level established early in 1941, the percentage of successful tests was far lower than last year. A total of 207 wells, of which 80 were oil producers, were completed during the half year as compared to 218 total completions and 116 oil wells for the same period last year.

Indiana production during the 6-month period fluctuated considerably but remained below 1941 production. The Griffin field, which produces about 60 per cent of Indiana's oil, received practically no development and accounted for the drop in crude output. Production from the Griffin field for the half year was 2,146,732 bbl. as compared to 2,718,660 bbl. for the same period last year. The state's total production was 3,541,447 bbl. for the 6 months, a decline of 163,063 bbl. from that for the first half of 1941. Although the production decline in the Griffin field was extremely great, production from the Mount Vernon field of Posey County, discovered in the latter part of 1941, made up a great part of the drop with the result that the decline for the entire state was small.

The majority of activity in the state centered in Gibson and Posey counties with Gibson County leading in development for the half year. Outstanding among the 1942 discoveries was the opening of the Osage lime to production in the Hazleton area of Gibson County. Although the discovery well was not large, it was the first to find Osage production in the Illinois-Indiana-Kentucky basin and resulted in considerable exploration and the subsequent completion of many Osage producers in the area.

Exploration in Posey County, as elsewhere in the state, proved disappointing. New pools in the county were heralded as large discovery wells and many of them were looked upon for a time as major discoveries. Offset tests in these fields, however, either failed or made such small pro-

(Continued on Page 132)

Clayton Pool Only Active Area in Ohio

THE effect of Conservation Order M-68 on Ohio operations is reflected in the 38 per cent decline in completions for the first 6 months of 1942 as compared with the like period for 1941; 469 tests were completed. The number of oil wells amounts to 101, a decline of 48 per cent, but the effect of more selective drilling and the development of the Clayton pool increased the total of initial new production 8 per cent over the corresponding 1941 period. There were 209 gas wells with a total initial open flow of 135,000,000 cu. ft. of gas and 159 dry holes.

Due to industrial demand of plants engaged in

(Continued on Page 138)

OHIO

Summary of Wells Completed First Half of 1942

County—	Comp.	Oil	Prod.	Gas	Dry
Ashland	18	1	8	9	8
Athens	22	2	7	6	14
Coshocton	10	2	78	5	3
Cuyahoga	5	0	0	4	1
Fairfield	6	0	0	3	3
Gallia	3	0	0	3	0
Guernsey	3	0	0	2	1
Guernsey	3	0	0	2	1
Hocking	3	1	30	2	0
Holmes	9	1	40	6	2
Knox	28	1	40	11	16
Lawrence	2	0	0	2	0
Licking	29	7	245	16	6
Lorain	11	0	0	6	5
Medina	34	14	529	12	8
Meigs	38	2	5	22	14
Monroe	23	10	94	9	4
Morgan	25	2	2	13	10
Muskingum	35	3	525	22	10
Noble	19	5	12	6	8
Perry	51	32	2,981	7	12
Stark	9	0	0	4	5
Summitt	7	2	55	4	1
Trumbull	1	0	0	0	1
Tuscarawas	14	0	0	10	4
Vinton	3	0	0	1	2
Washington	48	15	37	18	15
Wayne	8	0	0	5	3
Miscellaneous	5	1	80	1	3
Total	469	101	4,768	209	159

Completions by Months

Month—	Comp.	Oil	Prod.	Gas	Dry
January	120	27	1,260	48	45
February	56	11	529	29	16
March	50	7	109	21	22
April	70	15	1,023	27	28
May	88	25	993	42	21
June	85	16	854	42	27
Total 6 months 1942	469	101	4,768	209	159
Total 6 months 1941	757	193	4,390	334	245
Difference	288	92	378	125	86

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ORDOVICIAN AND MISSISSIPPIAN PAYS FOUND OVER WIDE AREA

By ROBERT INGRAM

SEARCH for deep production in North Central Texas, started more than 2 years ago with an intense leasing campaign, met with moderate success during the first 6 months of 1942. There were several discoveries in the Mississippian lime, a small-area Ellenburger strike west of K.M.A. at Potts-Ellenburger in Wichita County, and a Simpson sand discovery in Montague County which spurred a lively wildcat campaign throughout Montague County in June.

The Simpson sand pool, first in that region, was opened by Continental Oil Co. 1 P. Mueller, F. Hamilton Survey, 4 miles east of the town of Bowie. Production was found at around 7,200 ft. The well made an initial potential of 417 bbl. of oil a day, and, in view of the productiveness of Simpson pays in other parts of the Mid-Continent—Wilcox, Tulip Creek and McKee sands—was regarded as highly important to future development in the entire region. No other wells were

NORTH CENTRAL TEXAS

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Allar	2	1	575	1	0
Antelope	6	6	2,936	0	0
Anzac-Graham	1	1	46	0	0
Benson	1	1	275	0	0
Bowers	2	1	65	0	1
Bowie*	1	1	417	0	0
Briar Creek	3	1	58	1	1
Bryson	3	0	0	0	3
Bunger	2	1	52	0	1
Burns-Larrimore	2	1	15	0	1
Clingingsmith	3	3	1,225	0	0
Castleberry	1	1	195	0	0
Coleman	2	2	82	0	0
Consolidated	3	2	235	0	1
Craig	1	1	35	0	0
Electra	1	1	5	0	0
Fargo	2	1	175	0	1
Forrestburg*	1	1	888	0	0
Gibson & Jennings-Howard	1	1	400	0	0
Graham	1	1	24	0	0
Griffin	2	2	587	0	0
Halsell	3	2	192	0	1
Harrold	3	3	533	0	0
Herron City	1	1	60	0	0
Hoefle	6	5	2,249	0	1
Housley-McCord	4	3	119	0	1
Hull-Silk	5	4	418	0	1
Hultz-Owen	1	1	600	0	0
Iowa Park	1	1	100	0	0
James	3	1	613	0	2
Jermyn	1	0	0	0	1
Joy*	3	2	1,604	0	1
K.M.A.	38	30	10,361	0	8
K.M.A. Ellenburger	34	33	26,522	0	1
Knight	1	1	965	0	0
Knox	1	1	375	0	0
Loving	4	1	70	0	3
Mankins	2	1	41	0	1
Mathis	2	2	117	0	0
McClure*	1	1	400	0	0
McKnight	2	1	27	0	1
Nebraska	1	0	0	0	1
New York City	5	4	2,277	0	1
Nocona	2	1	985	0	1
North Knox Caddo	1	0	0	1	0
Petrolia	2	0	0	0	2
Pitzer-West	1	1	52	0	0
Potts-Ellenberger*	2	1	1,000	0	1
Ringgold	4	3	821	0	1
Rock Crossing-Ellenberger	3	3	1,838	0	0
Ross	3	3	1,962	0	0
Sanders	1	1	375	0	0
Scotland	3	3	1,353	0	0
Sewell	4	3	351	1	0
Seymore	3	2	141	0	1
Shannon*	1	1	450	0	0
Shell-Williams	1	1	43	0	0
South Electra	1	0	0	0	1
Spring*	1	1	400	0	0
Stoneburg	1	1	94	0	0
Thornberry (Knox)	19	6	274	0	13
Voth	2	1	25	0	1
Walnut Bend	3	3	771	0	0
Webb	1	1	71	0	0
Wilson	2	2	70	0	0
Worsham-Sewell*	1	1	90	0	0
Wildcats	87	0	0	0	87
Miscellaneous:					
Archer	29	14	395	0	15
Clay	28	19	812	1	8
Cooke	13	7	226	0	6
Jack	2	1	120	0	1
Montague	2	1	268	0	1
Throckmorton	11	5	134	0	6
Wichita	27	10	182	0	17
Wilbarger	4	3	130	0	1
Young	29	14	492	0	15
Total	457	241	69,858	5	211

*Discovery.

Completions by Months

	Comp.	Oil	Gas	Dry	Footage
January	174	114	2	58	409,559
February	60	29	1	30	141,227
March	57	23	0	34	178,581
April	48	27	0	21	131,822
May	64	26	1	37	220,072
June	54	22	0	32	171,453
Total 6 months	457	241	4	212	1,252,714

PRODUCTION 1939-1942

NORTH TEXAS

(In thousands of barrels)

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Archer County:											
Caddo	.....	.....	.....	.....	.....	133	87	0	0	23	22
Hull-Silk	120	260	1,047	1,666	1,954	1,864	1,907	14	392	419	420
Kadane	.....	1	10	18	25	67	110	0	2	23	24
Mankins	10	14	45	74	86	94	94	0	13	14	14
Scotland	.....	3	4	3	3	58	97	0	0	13	17
Vogtsberger	.....	.....	.....	.....	11	16	16	0	1	3	3
Other fields	1,791	1,728	1,692	1,612	1,534	1,599	1,522	3,732	3,591	3,576	3,403
Total	1,921	2,006	2,798	3,373	3,613	3,834	3,833	3,746	3,999	4,071	3,903
Baylor County:											
Rendham	.....	.....	2	7	20	33	42	0	4	12	13
Seymour	15	20	50	80	137	167	176	0	22	33	32
Portwood	184	168	160	147	106	96	121	160	146	143	127
Total	199	188	212	234	263	296	399	160	178	188	172
Clay County:											
Antelope	(†)	(†)	(†)	(†)	87	172	176	(†)	17	47	53
Burns Browning	8	24	43	23	16	14	15	0	3	3	3
Halsell	1	10	24	47	67	65	73	0	9	9	11
Hapgood	.....	.....	.....	24	28	27	26	0	3	3	3
Jay	.....	.....	.....	.....	.....	.....	46	0	0	0	3
New York City	.....	.....	.....	.....	.....	16	59	0	0	5	9
Ross	.....	.....	.....	.....	.....	50	61	0	0	10	14
Watson	.....	.....	.....	.....	.....	.....	16	0	0	0	1
Other fields	395	363	439	393	451	553	650	579	711	883	879
Total	404	397	506	487	649	897	1,122	579	744	960	976
Cooke County:											
Bindel	.....	.....	.....	.....	1	16	12	0	0	5	6
Voth	30	55	49	33	57	89	84	0	20	69	60
Walnut Bend	200	350	487	777	573	527	543	2	81	115	126
Wilson	.....	.....	.....	.....	.....	7	14	0	0	5	7
Other fields	677	639	843	804	811	807	720	826	931	1,019	987
Total	907	1,044	1,379	1,614	1,442	1,446	1,374	828	1,038	1,213	1,186
Foard County:											
Allee	.....	.....	.....	9	6	3	.....	0	4	4	0
Johnson	77	73	74	69	64	50	40	9	11	11	11
Thalia	8	8	7	5	6	5	6	7	5	5	5
Total	85	81	81	83	76	58	46	16	20	20	16
Jack County:											
Birdwell	.....	.....	.....	(†)	15	12	8	0	5	5	2
East Bryson	(†)	(†)	331	343	438	485	468	(†)	123	152	153
Hoefle	.....	.....	.....	.....	.....	6	55	0	0	1	6
Other fields	1,170	1,041	770	579	524	486	453	129	622	645	585
Total	1,170	1,041	1,101	922	977	989	984	129	750	803	746
Montague County:											
Benson	.....	.....	.....	.....	.....	11	18	0	0	2	4
Bonita	.....	.....	(†)	127	134	106	107	0	14	30	20
Bowers	7	17	39	78	87	158	168	0	18	30	31
Chapman-McFarlin	.....	.....	.....	.....	.....	.....	13	0	0	0	1
Clingingsmith	.....	.....	.....	.....	.....	23	39	0	0	4	5
Hultz and Owens	.....	.....	.....	(†)	10	16	25	0	0	2	3
Ringgold	.....	.....	(†)	34	61	74	110	0	8	10	12
Rogers and Rogers	(†)	(†)	214	477	249	185	224	0	38	45	47
Other fields	939	945	892	789	776	797	768	905	918	953	920
Total	946	962	1,145	1,505	1,317	1,370	1,472	905	996	1,066	1,043
Wichita County:											
Burkburnett	909	891	927	925	890	926	916	(†)	(†)	(†)	(†)
Electra	1,567	1,557	1,513	1,449	1,411	1,440	1,384	(†)	(†)	(†)	(†)
K.M.A.	3,857	3,923	5,164	6,331	4,863	5,451	5,421	858	1,492	1,719	1,722
Other fields	220	199	107	108	75	106	97	6,243	6,114	6,013	5,687
Total	6,553	6,570	7,711	8,813	7,239	7,881	7,718	7,091	7,606	7,732	7,409
Wilbarger County:											
Consolidated	.....	18	218	229	154	144	143	0	30	36	37
Fargo	.....	.....	.....	6	98	261	320	0	5	45	46
Harrold	.....	.....	.....	.....	.....	25	38	0	0	6	8
King	.....	24	23	10	13	8	5	0	7	10	10
Rock Crossing	.....	.....	.....	.....	.....	13	111	0	0	32	35
Other fields	1,575	1,426	1,510	1,004	1,286	1,246	1,133	1,592	1,594	1,583	1,569
Total	1,575	1,468	1,751	1,559	1,551	1,697	1,750	1,592	1,636	1,712	1,705
Young County:											
Anzac Graham	.....	.....	.....	.....	.....	14	16	0	0	2	4
Briar Creek	.....	.....	.....	.....	.....	17	24	0	0	6	8
Burns-Larimore	.....	.....	.....	.....	.....	7	14	0	0	4	4
James	(†)	(†)	(†)	*80	112	112	90	(†)	39	57	50
Knight	(†)	(†)	52	66	95	169	147	(†)	13	29	30
Knox & N.	(†)	(†)	(†)	*65	98	115	128	(†)	35	41	41
Lupton-McLester	.....	.....	.....	.....	*19	53	44	0	0	23	21
Sewell	(†)	(†)	115	123	153	176	120	(†)	24	42	43
Williamson	.....	.....	.....	.....	.....	.....	26	0	0	0	4
Other fields	1,876	1,813	1,711	1,403	1,397	1,319	1,211	1,787	2,235	2,272	2,221
Total	1,876	1,813	1,878	1,737	1,874	1,982	1,820	1,787	2,346	2,477	2,426
						19,001	20,456	20,458	16,833	19,313	20,242	19,522
Total N. Texas	15,636	15,570	18,562	20,427							

*Part of period: balance in "Other fields."
†In "Other fields."

completed in the pool at midyear, but several were drilling.

The big K.M.A. pool in Wichita County continued to dominate development in the area because of the Ellenburger production in the southwestern part of the field. Drilling was halted entirely in the field during February and March because of restrictions preventing more than one well to any 40 surface acres. An exception was granted in March, however, which permitted one Ellenburger well to each 40 acres regardless of shallow wells on the same location, and development was resumed with 34 wells drilled to the Ordovician in all.

Ellenburger production was also opened in Jack County, the first in that area. The discovery well, drilled by Taubert & McKee of Fort Worth, Tex., came in early in the spring but had not been completed at midyear because of water intrusion which operators were trying to shut off by a series of squeeze jobs. This well was near the town of Post Oak.

Deep Pay Is Found

Another new deep pool was opened in Montague County from the Marble Falls (basal Pennsylvanian) at Sinclair Prairie Oil Co. 1 Jones, I. Singletary Survey, 1 mile east of Forrestburg. Production from this zone, at 7,173 ft., was developed after the well tested through the Ellenburger by drilling to 8,696 ft. and finding no oil in that zone.

None of these discoveries touched off a development campaign and the biggest single-field drilling boom outside of K.M.A. was at the Hoefle pool, opened in October 1941 by Taubert & McKee and Sinclair Prairie Oil Co. in the A. James Survey, 12 miles northwest of Jacksboro, where five oil wells and one dry hole were completed. Next in general interest came Clingingsmith, a Sinclair Prairie 1941 discovery near the Rogers & Rogers field in Montague County, where three oil wells were drilled, and the Joy pool in Clay County, where two oil wells and one dry hole were completed.

Wildcatting accounted for 87 dry holes in the area, and 13 discoveries.

WEST CENTRAL TEXAS

A large percentage of successful wildcats were drilled in West Central Texas during the first 6 months of the year, but few were more than producers on small one or two-well structures. One of importance was the opening of the first production in Coke County, about midway between the fields of the Permian basin and other production in the states.

The William F. Morgan 1 J. S. Craft, 3 miles south of the town of Blackwell, made a 175-bbl. well from the Cisco section of the Pennsylvanian lime at 3,820-28 ft. It was a diagonal southwest offset to Mid-Kansas 1 W. E. Lackey, which had good shows from the same section in April 1939 but failed to produce. No development was undertaken in the new pool until the end of June when an 8,000-acre lease block was completed by Mr. Morgan and plans for additional wells were started.

Another well likely to start moderate drilling was Huffman-Holland 1 Dr. R. Bailey, 3 miles southeast of Echo, in Coleman County, a discovery in the Bend series at 2,713-93 ft. Still another was H. T. Owens et al 1 M. L. Coker estate, a Morris sand discovery in Coleman County, at 3,070 ft., total depth, which opened the Coker pool.

INDIANA

(Contnued from Page 130)

ducers that the areas were left without further development.

INDIANA

Summary of Wells Completed First Half of 1942

County—	Comp.	Oil	Prod.	Gas	Dry
Cass	1	0	0	0	1
Daviess	12	1	8	2	9
Gibson	49	24	1,922	0	25
Harrison	1	0	0	0	1
Jay	4	0	0	2	2
Knox	4	0	0	0	4
Madison	2	0	0	0	2
Martin	1	0	0	0	1
Pike	4	1	25	0	3
Posey	60	28	6,390	0	32
Pulaski	2	0	0	0	2
Randolph	3	0	0	2	1
Rush	4	0	0	2	2
St. Joseph	2	0	0	0	2
Spencer	15	19	413	0	5
Sullivan	6	1	30	1	4
Vanderburg	11	2	54	0	9
Warrick	4	1	40	0	3
Wayne	1	0	0	1	0
White	1	0	0	0	1
Miscellaneous	20	12	326	0	8
Total	207	80	9,208	10	117

Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	50	24	4	22	90,616
February	14	6	1	7	13,027
March	28	7	2	19	46,725
April	32	17	0	15	54,888
May	21	8	2	11	42,620
June	21	3	2	16	30,897
First half 1942	166	65	11	90	278,773

WEST CENTRAL TEXAS

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Akard	1	1	100	0	0
Albany	1	1	4	0	0
Amity	2	2	44	0	0
Avoca	1	0	0	0	1
Blackwell*	1	1	175	0	0
Bluff Creek	1	1	15	0	0
Caddo	2	0	0	0	2
Cisco Lake	1	0	0	1	0
Coker*	1	1	199	0	0
Cook	7	7	559	0	0
Corbett	2	2	207	0	0
Daniel-Black	1	1	67	0	0
Desdemonia	1	1	10	0	0
Dodson-Wilson	1	1	4	0	0
Dunigan	1	1	84	0	0
Duster	1	1	20	0	0
Echo	1	1	34	0	0
Elliott*	2	2	109	0	0
Ellis-Bridges*	1	0	0	1	0
Freyschlag & Graves	1	1	5	0	0
Greynolds-Boatman	1	1	9	0	0
Hamer-Smith	1	1	8	0	0
Hendrickson-Milner	1	1	9	0	0
Hightower	1	0	0	0	1
Huffman-Baily*	1	1	85	0	0
Hunter-Anderson	1	1	19	0	0
Irvin	1	1	13	0	0
Jim Ned	6	4	522	1	1
Kittery-Hendrick	1	0	0	1	0
Kleiner-Dawson	1	1	66	0	0
Lawson-Rose	1	1	50	0	0
Lewis	2	0	0	0	2
Loving	3	3	43	0	0
McCaulley	6	5	287	0	1
McMillan & S. W.	3	2	73	0	1
Merkel	4	2	786	0	2
Merry-Greer	1	1	300	0	0
Nail	3	3	362	0	0
Noodle	2	0	0	0	2
Novice	6	5	551	0	1
Petroleum-Walker	1	1	8	0	0
Putnam	1	0	0	0	1
Rutherford*	1	1	54	0	0
Salt Creek	3	0	0	3	0
Sayles	1	0	0	0	1
Scranton	1	1	100	0	0
Sedwick	1	0	0	1	0
Silver Valley	3	2	137	0	1
Snoddy-Tipton	1	1	250	0	0
Stawn	1	0	0	0	1
Trent	2	1	10	0	1
Wimberly	15	13	2,481	0	2
Wildcats	70	0	0	0	70
Miscellaneous:					
Brown	10	5	44	3	2
Callahan	3	1	26	0	2
Coleman	2	0	0	0	2
Palo Pinto	2	1	15	1	0
Shackelford	4	2	54	0	2
Taylor	1	1	10	0	0
Total	199	88	8,048	12	99

*Discovery.

Completions by Months

	Comp.	Oil	Gas	Dry	Footage
January	51	28	3	20	116,766
February	37	15	1	21	84,701
March	32	13	1	18	72,768
April	18	7	1	10	48,549
May	34	14	5	15	86,687
June	27	11	1	15	64,791
Total 6 months	199	88	12	99	474,262

PRODUCTION 1939-1942

WEST CENTRAL TEXAS

(In thousands of barrels)

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
Brown County	269	271	263	259	242	241	250	948	895	860	849
Callahan County	210	188	212	187	184	179	155	1,217	1,216	1,165	1,168
Coleman County:											
Anzac Morris	.....	.....	11	28	22	26	24	0	5	9	10
Goldsboro	.....	.....	15	40	39	36	25	0	9	11	10
Novice	.....	18	32	19	17	16	21	0	6	9	9
Novice, N.	.....	.....	3	124	106	153	133	0	22	36	37
Silver Valley	.....	.....	.....	.....	.....	26	48	0	0	0	9
Other fields	185	169	163	72	134	142	141	350	330	315	320
Total	185	187	224	283	318	399	392	350	374	380	395
Comanche County:											
Amity	.....	4	51	37	32	42	36	0	46	57	58
Other fields	20	35	9	13	11	11	11	86	60	60	59
Total	20	39	60	50	43	53	47	86	106	117	117
Eastland County	497	452	468	445	447	419	391	502	458	456	435
Erath County	12	11	12	14	14	14	13	17	19	17	16
Fisher County:											
Bennett	.....	.....	.....	.....	3	4	4	2	2	2	2
McCauley	.....	.....	.....	.....	6	14	30	0	0	4	7
Rotan	.....	.....	.....	.....	84	68	59	30	33	33	33
Royston	.....	.....	.....	.....	247	223	201	110	110	103	104
Total	580	476	454	360	340	310	293	142	145	140	146
Haskell County	18	12	10	8	7	6	9	10	9	8	10
Jones County:											
Akard	5	14	14	17	28	50	57	0	7	24	25
Avoca	270	251	262	153	174	230	207	40	55	55	56
Avoca, N.	.....	.....	.....	5	15	24	28	0	3	7	7
Griffin	285	408	315	312	207	263	244	3	66	66	65
Hawley	97	84	73	61	59	60	57	66	65	64	63
Lewis-Steffens	230	300	285	319	349	317	237	61	179	186	190
Sayles	225	180	168	158	163	160	149	43	59	79	79
Wimberley	.....	.....	.....	.....	2	16	75	0	0	14	26
Other fields	267	284	358	509	254	162	238	151	200	214	198
Total	1,379	1,521	1,475	1,534	1,251	1,282	1,292	364	634	700	708
Nolan County	.....	1	(†)	.....	.....	.....	.....	0	0	0	0
Palo Pinto County	61	67	67	60	53	46	49	156	147	129	131
Shackelford County:											
Ivy	133	264	296	224	228	212	187	23	80	80	80
Nail	.....	.....	.....	.....	19	30	37	0	0	12	16
Other fields	927	829	901	867	819	807	657	1,762	1,944	1,961	1,908
Total	1,060	1,093	1,197	1,091	1,066	1,049	880	1,785	2,024	2,041	2,004
Stephens County:											
Donnell	.....	.....	.....	.....	.....	.....	15	0	0	0	1
Loving	.....	3	15	20	28	30	23	0	4	10	13
Stribling	2	16	47	46	32	19	11	1	13	13	13
Other fields	645	566	624	560	554	535	426	636	605	592	587
Total	647	585	686	626	614	584	475	637	622	615	613
Stonewall County	20	19	14	25	15	22	14	1	4	4	5
Taylor County:											
Merkel	.....	.....	.....	.....	.....	18	23	0	0	6	8
Southview	.....	.....	.....	2	35	39	36	0	5	11	11
Other fields	23	54	65	52	21	25	29	15	26	27	30
Total	23	54	65	54	56	82	88	15	31	44	49
Throckmorton County	53	51	53	48	62	122	152	133	152	222	252
Runnels County	11	14	19	18	16	17	38	18	13	5	5
Total W. C. Tex.	5,065	5,041	5,280	5,042	4,726	4,825	4,538	6,381	6,849	6,903	6,903

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DRILLING OPERATIONS DECREASE; TWO DEEP SANDS FOUND

By
T. R. INGRAM

DRILLING operations in the Rocky Mountain area the first half of 1942 reflected a marked change from the same period a year ago. Outside of Northwest New Mexico, the three states in the area, Colorado, Wyoming and Montana, showed decreases. There were 136 completions in the last named states against 203 last year, a decrease of 33 per cent. Colorado showed a decrease of 74 per cent in the number of completions and 9.3 per cent in initial production. Wyoming had a decrease of 30.5 per cent in completions and 33.9 per cent in production. Montana dropped 27.6 per cent in completions and 35.3 per cent in initial production.

Colorado had only two major wildcats drilled to completion, neither of which resulted in a discovery. Wyoming, while far below the record of past years, fared better in results. Only eight important wildcats were drilled, of which four were dry and four were discoveries. Two of the latter were oil wells, Pilot Butte and Cody, both of which found production in deeper horizons, and two were gas wells, South Elk Basin and Sherrard. Montana showed up with one wildcat abandoned and two marking small extensions of discoveries made last year. These were in West Kevin and Midway.

Improved marketing conditions, particularly for heavy crudes resulted in an increase in production from all areas. Colorado showed the sharpest change with increases of 17 and 42 per cent over the last and first halves of 1941, respectively. Wyoming with 6 and 14 per cent increases over the same periods and Montana with 2 and 15 per cent were considerably more important in terms of barrels.

In Northwest New Mexico there was a considerable increase in drilling over the first period of 1941 due to the development of the Hospah field in McKinley County. The extent to which this added development has increased production from the area is unknown as the New Mexico Conservation Commission does not report production from this field nor are the figures obtainable elsewhere.

There are many known structures in the Rocky Mountain district which have not been prospected, mainly because of normally poor transportation facilities, a condition which has been intensified since the war began. Most prospecting consists of drilling deep tests on known producing structures and many of these remain to be tested to the Tensleep and Embar. The possibilities of the Madison and other pre-Pennsylvanian horizons in Wyoming and Colorado are still practically unknown.

PRODUCTION 1939-1942

(In thousands of barrels)

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940	Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
COLORADO											
Florence	31	30	30	27	29	26	26	105	107	106	106
Fort Collins	19	20	29	29	24	21	19	7	8	6	6
Greasewood	4	2	5	4	2	.....	.....	1	1	0	0
Iles	378	358	302	277	270	280	274	34	35	31	31
Hiawatha	.....	.....	26	54	90	102	86	0	10	5	5
Moffatt	52	52	53	61	54	61	65	12	12	13	13
Price	88	94	84	49	54	41	168	9	9	9	9
Rangeley	5	15	17	17	18	42	128	5	8	14	15
Tow Creek	25	27	25	24	25	25	23	15	15	9	9
Wellington	37	38	37	32	33	39	45	11	11	11	11
Wilson Creek	55	75	111	119	184	273	255	1	2	5	7
Powder Wash	.....	.....	.....	.....	.....	41	23	0	0	3	3
Total	694	721	719	693	783	951	1,112	200	218	212	215
WYOMING											
Lance Creek	2,690	4,007	4,337	4,863	4,485	4,434	4,035	87	133	159	164
Salt Creek	2,765	2,587	2,640	2,674	2,5 6	2,560	2,498	1,998	1,880	1,870	1,870
Badger Basin	26	25	42	54	30	28	22	4	4	3	3
Big Muddy	218	216	214	221	211	211	200	149	149	149	149
Byron	220	416	456	369	538	411	811	15	16	15	16
Cole Creek	10	13	39	111	133	154	178	1	9	13	14
Dallas-Derby	71	87	77	92	66	78	64	42	42	42	42
Elk Basin	103	102	104	134	106	111	116	142	142	144	144
Frannie	184	365	422	534	540	577	607	13	14	21	24
Garland	382	473	608	499	338	277	268	13	16	14	15
Grass Creek	427	351	271	440	505	659	782	331	330	330	330
Hamilton Dome	152	55	37	185	68	187	176	33	33	33	33
La Barge	159	175	215	317	334	356	571	95	106	122	122
Lander	42	44	44	42	47	52	52	11	11	11	11
Lost Soldier	341	331	354	500	993	1,321	1,235	56	74	83	85
Mahoney	51	57	55	103	273	191	197	2	4	8	10
Maverick Springs	.....	.....	.....	4	109	387	454	0	2	20	24
Medicine Bow	362	254	142	133	124	124	126	10	10	10	10
Mule Creek	24	39	38	41	68	77	63	59	42	42	42
Oregon Basin	385	628	873	1,263	1,129	1,553	1,879	34	41	49	57
Osage	139	123	109	110	109	104	103	370	300	291	292
Pilot Butte	.....	.....	.....	.....	.....	1	32	.....	.....	5	6
Poison Spider	33	3	.....	43	46	43	34	14	14	14	14
Quealy	121	99	95	83	79	82	82	17	17	17	17
Rex Lake	.....	.....	.....	.....	8	14	113	0	3	3	3
Rock River	514	418	462	458	469	475	477	54	55	46	47
South Casper Creek	.....	.....	.....	31	79	82	84	17	16	21	21
Wertz	276	520	432	682	908	954	1,182	3	4	13	17
Miscellaneous	64	61	91	88	126	71	70	52	41	37	38
Total	9,759	11,448	12,157	14,075	14,435	15,574	16,441	3,622	3,508	3,585	3,620
MONTANA											
Cat Creek	101	90	91	91	85	83	75	130	104	104	104
Cut Bank	1,576	1,909	1,913	2,092	2,352	2,645	2,764	355	521	632	662
Dry Creek, etc.	168	145	129	117	81	85	99	30	30	32	33
Kevin-Border	740	845	968	881	794	926	893	1,187	1,102	1,074	1,084
Pondera	126	153	141	160	144	149	132	152	161	153	153
Total	2,711	3,142	3,242	3,341	3,456	3,888	3,963	1,854	1,908	1,995	2,036

Note.—Northwest New Mexico production on Page 100.

WYOMING

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Byron	1	1	300	0	0
Circle Ridge	4	4	799	0	0
Cole Creek	1	1	120	0	0
Frannie	3	3	894	0	0
Garland	1	1	200	0	0
Lance Creek	6	5	807	0	1
Lost Soldier	2	2	715	0	0
Mahoney	2	2	200	0	0
Oregon Basin	8	8	3,881	0	0
Osage	3	1	4	0	2
Pilot Butte	1	1	750	0	0
Rock River	1	1	205	0	0
Sherrard	1	0	0	1	0
Shoshone (Cody)	1	1	200	0	0
South Elk Basin	1	0	0	1	0
Wertz	4	4	1,470	0	0
Miscellaneous	7	0	0	0	7
Total	47	35	10,545	2	10

WYOMING

Completions by Months

Month—	Comp.	Oil	Prod.	Gas	Dry
January	8	6	1,920	1	1
February	9	6	998	0	3
March	9	6	2,166	0	3
April	4	2	341	1	1
May	12	10	3,336	0	2
June	5	5	1,784	0	0
First half 1942	47	35	10,545	2	10
First half 1941	68	55	29,198	1	12
Difference	21	20	9,653	1	2

MONTANA

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Bowdoin	12	0	0	12	0
Cat Creek	1	0	0	0	1
Cedar Creek	1	0	0	0	1
Cut Bank	46	38	5,001	1	7
Hardin	1	0	0	1	0
Kevin-Sunburst	23	16	954	2	5
Total	84	54	5,955	16	14

Completions by Months

Month—	Comp.	Oil	Prod.	Gas	Dry
January	20	10	964	5	5
February	12	8	1,207	4	0
March	11	9	1,111	0	2
April	12	4	56	4	4
May	18	15	1,519	2	1
June	11	8	1,098	1	2
First half 1942	84	54	5,955	16	14
First half 1941	116	67	9,229	31	18
Difference	32	13	3,274	15	4

COLORADO

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Kit Carson	1	0	0	0	1
Rangely	1	1	10	0	0
South Towner	1	0	0	0	1
Wilson Creek	2	2	925	0	0
Total	5	3	935	0	2

Completions by Months

Month—	Comp.	Oil	Prod.	Gas	Dry
January	1	0	0	0	1
February	3	2	495	0	1
June	1	1	440	0	0
First half 1942	5	3	935	0	2
First half 1941	19	12	1,031	1	6
Difference	14	9	106	1	4

NORTHWEST NEW MEXICO

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Ambrosia Lakes	1	0	0	0	1
Barker	2	0	0	2	0
Bloomfield	1	0	0	0	1
Hospah	9	9	362	0	0
Total	13	9	362	2	2

Completions by Months

Month—	Comp.	Oil	Prod.	Gas	Dry
January	4	4	103	0	0
February	4	2	90	1	1
May	3	2	49	1	0
June	2	1	120	0	1
First half 1942	13	9	362	2	2
First half 1941	6	0	0	2	4
Difference	7	9	362	0	2

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Search for New Oriskany Gas Yields Few Results

DURING the first half of 1941, wells completed in Southwest Pennsylvania were fewer than in the preceding year. The demand for gas and Pennsylvania Grade oil, however, had increased but due to the unfortunate delay in modifying and granting exceptions to Order M-68 of the OPM, many drilling programs under way were interrupted and some never resumed.

Eastern operators have been interested for some years in testing the Lower Devonian but this half year nothing was added as possible new pools. Several structures were tested but all proved disappointing. In Center Township, Beaver County, a test found salt water. In Fayette County, a test on the Fayette anticline in South Huntington Township, drilled through the Oriskany which was tightly cemented and void of any showing at all. In Richhill Township, Greene County, a deep test on the Washington anticline found the Oriskany without gas or oil and but a small showing of salt water. In Slippery Rock Township, Lawrence County, a test had a small showing of gas in the Oriskany followed by a showing of Pennsylvania Grade oil.

On Chestnut Ridge in South Union Township, Fayette County, additional wells were completed in the Onondaga lime and Oriskany sand. One Onondaga test gaged as high as 12,000,000 cu. ft. gas from the upper chert beds. Another drilled through the Oriskany into the Helderberg struck a gas pay yielding over 14,000,000 cu. ft. believed from a fissure as it was soon exhausted. A test on the west flank of the structure ended over 1,000 ft. low and is believed to have been bottomed on the downthrow side of the Turkey Nest fault. It was dry in the Oriskany.

In the shallower areas, several fair gas wells were completed in Fayette County in the Injun or Fifty Foot sands. Southwest of this in Monongahela Township, Greene County, the largest Injun sand well in years was completed with an initial gage of 13,000,000 cu. ft. On the east side of this township, two wells had a good showing of oil in the Big Dunkard sand but on account of its remoteness from other oil production was cased off to reach the underlying gas. In Nottingham Township, Washington County, an Injun sand well was completed which gaged almost 2,000,000 cu. ft. a day and is located on the east part of the township where no Injun pool exists.

Activity still continues in Armstrong County for the Murraysville, Hundred Foot, Tiona, Sheffield and Bradford sand gas. Most of the wells are small but with a fair rock pressure. The same is true of Clarion County. Indiana County was almost dormant. There was little activity in Beaver or Allegheny counties.

To the east on Laurel Ridge in Ligonier Township, Fayette County, a test is being drilled to the Oriskany sand and is running high compared with a previous test which had as high as 750,000 cu. ft. gas before being drowned out by salt water. Still to the east, a test in Garrett County, Maryland, is nearing 7,000 ft. and will test the Accident dome Oriskany at a new location.

SOUTHWEST PENNSYLVANIA

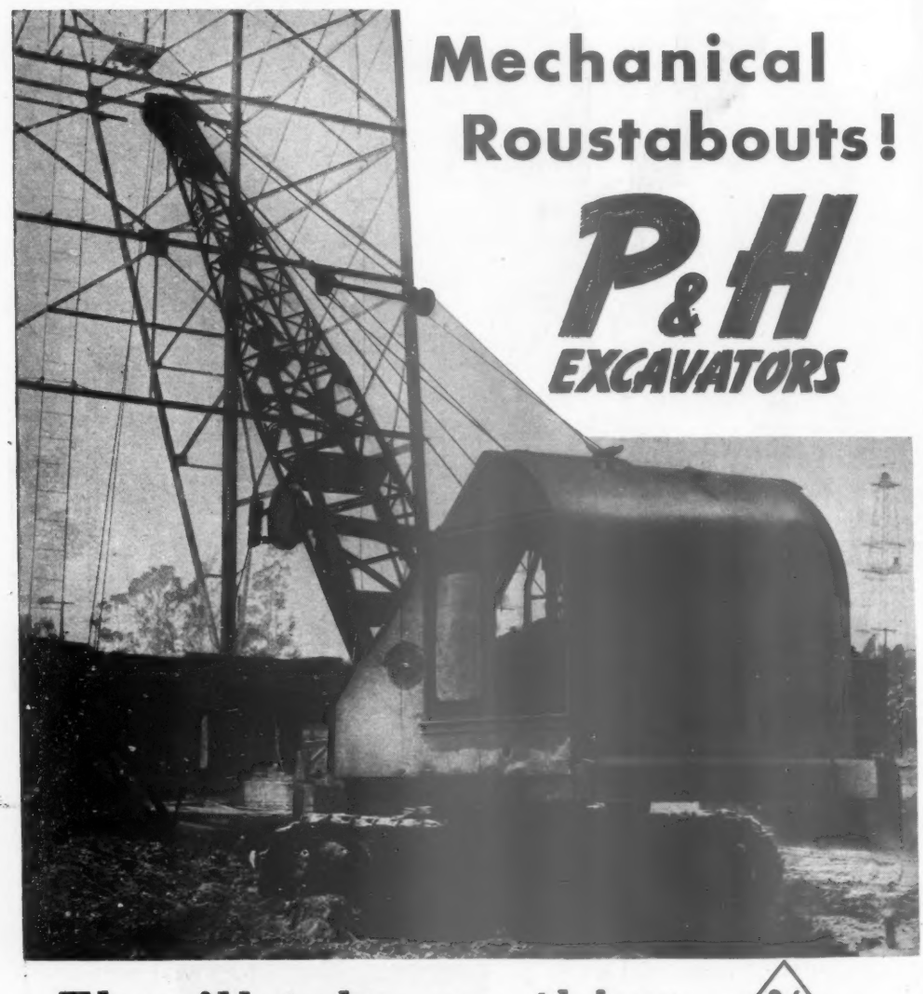
Completions by Months

Month—	Comp.	Oil	Prod.	Gas	Dry
January	25	0	0	24	1
February	27	1	40	23	3
March	21	0	0	13	8
April	24	0	0	19	5
May	34	1	30	26	7
June	22	1	100	17	4
Total	153	3	170	122	28
First half 1941	178	3	35	141	34

WEST VIRGINIA

The Oriskany pool in Kanawha and Jackson counties, West Virginia, still continues the outstanding feature of the Appalachian fields. Kanawha County has been well explored and practically limited but the extension in Jackson County is still being probed. During the first half of the year 32 gas wells were completed in the Kanawha County part with only 4 failures and in Jackson County, embracing Washington, Ripley and Ravenswood districts, 73 gas wells were brought in with only 6 dry holes. As the average depth of the wells is 5,000 ft. the total Oriskany footage drilled in both counties approximated 575,000 ft. Few wells gaged less than 1,000,000 cu. ft., many over 5,000,000 cu. ft. and some up to 20,000,000 cu. ft. with rock pressure up to 1,800 lb.

In Lewis County, after completing a commer



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cial well in the Oriskany sand on the west flank of Chestnut Ridge in Freemans Creek district in 1941, a second test this year was noncommercial but with a gas showing. It was lower on structure. In Ritchie County, a test was drilled through the Oriskany sand on the west flank of the Wick anticline in Grant district but it was dry and is now being deepened to the Newburg horizon in the Lockport dolomite.

In spite of failures in the deep search, wildcats are still being drilled. In Spring Creek district, Wirt County, on the west flank of the Burnings Springs anticline; in Union district, Union County; in Meade district, Tyler County; in Reedy district, Roane County; in Steele district, Wood County, and in Clay district, Hancock County, deep tests are now under way and some nearing the Lower Devonian. In Richmond and Marsh Fork districts, Raleigh County, new tests have started as well as in Union district, Mason County. All are being closely scouted.

A new interesting test has been started in Franklin district, Marshall County, on the Defense Plant Corp. properties in search of brine, and will be drilled by rotary to the salt beds below the Helderberg. The findings will be of interest to the industry when the record may become public.

In the more shallow areas, the most outstanding is the development of a small oil pool in the Big lime in the heart of the Oriskany field in Poca district, Kanawha County, where wells with an initial of 300 bbl. a day were completed. Drilling is still under way. In Grant district, Wetzel County, a sizable oil well was completed but a second well missed the pay.

Scattered over the area in Gilmer, Ritchie, Putnam, Logan and Calhoun counties, an occasional large gas well was reported. The largest was probably in Buffalo district, Clay County, where the initial gage was known to have exceeded 25,000,000 cu. ft. gas before casing was run and still gaged several million when shut in. In Otter district, Clay County, and Birch district, Braxton County, good wells were reported.

As shown by the totals except in Kanawha County, no new oil pool or lens was developed into any size. Much work interrupted by M-68 has now been resumed under exceptions. The price structure of Pennsylvania Grade crude is still too low in the West Virginia and lower Pennsylvania operator's point of view for the hazard involved in wildcatting or edge-pool development. Indications from drilling programs point to a busy second half of the year in which operations will again reach the high of last November before M-68 cut down its momentum unless again interrupted by new regulations which retard small independents as well as the majors.

Oil production in West Virginia and Southwest Pennsylvania has not increased to meet the refinery demand for Pennsylvania Grade crude. Without the flush production from Perry County, Ohio, and the increase in secondary recovery in the Bradford and Allegany districts in upper Pennsylvania and New York, the industry would be unable to meet the demand as much of the stored oil has been withdrawn to meet the peak.

WEST VIRGINIA

Completions by Months

Month—	Comp.	Oil	Prod.	Gas	Dry
January	74	10	493	54	10
February	52	11	286	30	11
March	54	5	43	43	6
April	73	12	200	51	10
May	52	9	179	33	10
June	74	8	58	55	11
Total	379	55	1,259	266	58
First half 1941	352	44	734	242	66

PENNSYLVANIA-NEW YORK

Small price increases were insufficient to maintain the development of secondary-recovery projects in the Bradford district at the same level as in former years and this drilling may continue its downward trend. At the same time, other areas in Pennsylvania have not shown sufficient promise to warrant a repressuring or flooding campaign except at considerably higher prices.

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Bradford	1,607	*1,607	1,368	0	0
Allegany	610	*610	493	0	0
North Oriskany	15	0	0	7	8
Middle District	63	42	52	9	12
Butler-Armstrong	12	6	12	1	5
Total	2,307	*2,265	1,925	17	25

Completions by Months

Month—	Comp.	Oil	Prod.	Gas	Dry
January	329	325	260	3	1
February	363	353	303	3	7
March	358	344	245	5	9
April	382	376	312	2	4
May	435	429	384	2	4
June	440	438	421	2	0
Total	2,307	*2,265	1,925	17	25

*Includes 1,015 water input wells.

KENTUCKY-VIRGINIA

Continued attempts to bring Virginia into the ranks of the oil-producing states met with success when a small producer of high-gravity crude was completed in the western tip of Lee County. This discovery, reported from the Trenton, opens a long narrow zone along the Appalachian Mountain front for prospecting. The oil resembles that from Cabin Creek.

In Kentucky there was little to report during the half year. The western section is quiet, owing to the lack of recent discoveries although the discovery of small fields in southern Indiana is expected to spur prospecting south of the river. In the eastern part of the state, the active search for gas undertaken last year has largely subsided in spite of comparative freedom from drilling restrictions. Most of the drilling has been in the Big Sandy field in Floyd and surrounding counties and little exploratory work has been done.

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CANADA

(Continued from Page 127)

In the northern foothills, near Rocky Mountain House, Ram River Oils 2, drilling on the Ram River structure, has encountered strong oil showings in the Devonian limestone around 4,340 ft. and is preparing to test. This is the first substantial showing of Devonian oil in Alberta, and may pressage an important field, particularly as Clear Oils 1, farther south, last year encountered encouraging showings. Production test is also pending at Dome Oil & Gas 3, on the Forgetmenot-Moose dome structure farther south.

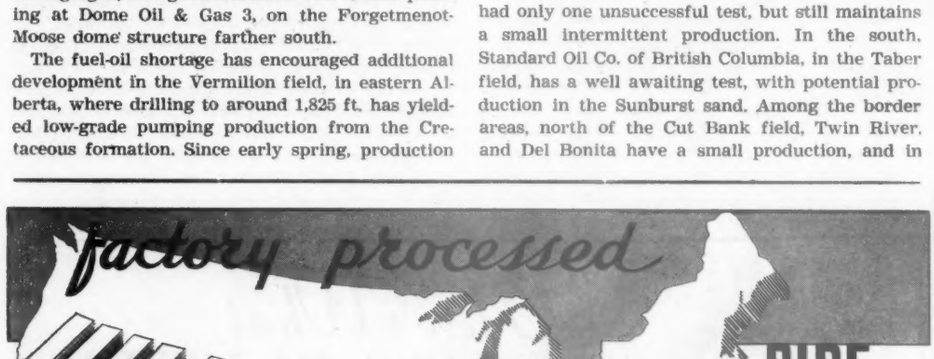
The fuel-oil shortage has encouraged additional development in the Vermilion field, in eastern Alberta, where drilling to around 1,825 ft. has yielded low-grade pumping production from the Cretaceous formation. Since early spring, production has gradually expanded. The crude, after minor processing in a local plant, is sold to the railways for fuel oil. Efforts are being made to extend the proven field, with Northwest Co. in particular carrying on a systematic development program in the Claysmore area, to the west. The Wainwright field, still farther west, where six wells have maintained a steady production of low-grade crude since 1930, is an area where similar extension is probable.

The Steveville field, active in 1941, this year had only one unsuccessful test, but still maintains a small intermittent production. In the south, Standard Oil Co. of British Columbia, in the Taber field, has a well awaiting test, with potential production in the Sunburst sand. Among the border areas, north of the Cut Bank field, Twin River, and Del Bonita have a small production, and in these, and in Ross Lake, further development is planned.

Turner Valley continues the dominant production area, with the most extensive drilling in its history. Development, which in 1941 shifted from the West Central area (Township 19) to North Turner Valley (Township 20), has this year moved north into Township 21, where some of the biggest producers in the field have been drilled. These results led to the starting of new tests strung north a distance of perhaps 11 miles through Township 22 into Township 23. This activity received a setback when Ace Royalties 2, LSD 10, 22-22-4w5, was abandoned in the lower Benton at 8,244 ft. Numerous tests in this far northern extension are shut down while operators work out a policy of more cautious extension of the proven field.

The Alberta Conservation Board has meanwhile adopted a new conservation policy, suggested by Dr. G. Granger Brown, of basing Turner Valley allowables on a fixed reservoir fluid allowable of 25 bbl. per acre. This is expected to curtail gas wastage and favor those wells with a low gas-oil ratio.

In eastern Canada, the most promising development is an agreement between the federal and provincial governments for the prospective utilization of the extensive oil-shale deposits of New Brunswick. Details of operations are now being worked out.



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Production—January to June 1942

	Production	No. wells Jan. 1	No. wells July 1
Turner Valley:			
Limestone crude	4,907,442	177	189
Gas wells	15,972	43	40
Shallow crude	2,945	3	3
Natural gasoline	160,902	0	0
Red Coulee	5,129	7	7
Wainwright	6,669	6	7
Vermilion	27,606	5	12
Taber	5,313	1	1
Del Bonita	1,128	1	2
Tilley	3,200	0	1
Lloydminster	477	1	1
Steveville	3,444	2	1
Dina	2,400	2	2
Total Alberta	5,142,627	248	266
New Brunswick	9,891	0	0
Ontario	73,474	0	0
Total Canada	5,225,992	0	0

ALBERTA

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Flush prod.	Allowable	Gas	Dry
Turner Valley:						
West Central	9	9	3,372	1,731	0	0
North	2	1	5	5	0	1
North Extension	7	6	8,422	4,136	0	1
Tilley	4	1	80	80	1	2
Wainwright	1	1	8	8	0	0
Monitor	3	0	0	0	0	3
Steveville	1	0	0	0	0	1
Oyen	1	0	0	0	0	1
Grease Creek	1	0	0	0	0	1
Ribstone	1	0	0	0	0	1
Vermilion	5	3	125	125	0	2
Total	36	22	12,012	6,085	1	13

Completions by Months

Month—	Comp.	Oil	Flush prod.	Allowable	Gas	Dry
January	4	3	433	306	0	1
February	4	4	5,760	2,668	0	0
March	7	3	1,665	525	0	4
April	4	2	410	205	1	1
May	11	6	3,706	2,343	0	5
June	5	3	38	38	0	2
Total	35	21	12,012	6,085	1	13

OHIO

(Continued from Page 130)

war production and the peculiarities of the producing horizons in the Appalachian region Supplementary Order M-68-1 was issued to permit the drilling of gas wells on 40-acre spacing to all horizons except the Onandaga limestone, Oriskany sandstone or Devonian shale horizons, 160 acres being the minimum acreage requirements for these horizons.

The pooling of leasehold interests in order to

comply with the spacing and acreage requirements of M-68-1 has been successful.

Southeastern Ohio

The fast growing Clayton pool in Perry County is one of the most important developments of Pennsylvania Grade oil in the Appalachian region in recent years. The Clinton sand has proved its productivity in Ohio and the results so far obtained indicate this pool to be above the average. Operations were somewhat retarded at the beginning of the year, but subsequently an exception was granted for the pool and the prospective surrounding acreage; the area included is about 7,000 acres. The pool, even before M-68, was being developed on an economic spacing plan. Twenty-one producers were completed in the 6-month period with initial productions ranging up to 287 bbl.; only one dry hole was recorded. There are now 85 producing wells in the field, with an average depth of 3,200 ft. May 1942 production for the pool was 35,000 bbl. The proven area covers approximately 4,500 acres. A test 3 miles south of the present pool found a small gas showing in the Clinton.

A strike south of Stafford, Monroe County, resulted in fair oil wells in the Monroe County lime. Pay in this horizon, in that vicinity, has in the past proven to be local.

Numerous tests were drilled to the Berea and shallower horizons with only fair results being obtained in the proven fields.

The Parkersburg syncline was tested in northern Washington County to the Oriskany only to find water in the sand. The same structure is now being tested northeast of McConnelsville on the western side of the syncline with the hope of finding Oriskany pay in a depositional trap where the sand commences to pinch out.

The eastern flank of the Cambridge anticline in northwestern Guernsey County is also getting a test.

Central Ohio Fields

The Hinckley pool in northeastern Medina County gives indications of developing into a major gas pool in the Clinton horizon. Eight wells were completed with an average flow of 1,700,000 cu. ft. One oil well with an initial production of 125 bbl. was drilled in the Clinton shell.

The Blacheyville area in Wayne County is attracting the attention of Clinton sand operators of northern Ohio.

A 9,000,000-cu. ft. gas discovery in Holmes County opened another Clinton sand lens in this section; offsets have not as yet been completed.

The pool north of Fultonham, Muskingum County, yielded a 495 bbl. initial producer. This Corning grade pay was found in the Clinton at 3,406 ft. The eastern offset found the horizon dry.

Gas completions in the prolific Brush Creek (Gaysport) pool in Muskingum and Morgan counties were below average. The 16 gas wells completed in the Clinton sand made only 11,000,000 cu. ft. total open flow. A test 2 miles south of the proven area was plugged after finding only a small show of gas in the Clinton.

A gas strike was made in the west central part of Vinton County in the Clinton at 2,400 ft. Sand lenses to the east of this test have covered only small areas.

Secondary-recovery operations in the Berea sand at Lodi, Medina County, were at a minimum.

Explanatory operations were none too successful. The Magnolia company test at Lordstown, Trumbull County, was dry through the Clinton to 4,828 ft. Ohio Oil Co. found a small gas showing in the top of Trenton in Pennsylvania just east of the Ohio State line at Lake Erie. Drilling was stopped in the Trenton at 4,457 ft.

In northeastern Ohio tests in Seneca and Wood counties reached the St. Peter horizon without success. An exploratory test is now drilling to the sub-Trenton horizon, 10 miles east of Tiffin.

FOREST CITY BASIN

Seventeen wells were completed in Nebraska the first half of 1942 compared to 47 for the same period last year. Except for a few wildcats, the majority of wells drilled were in the Dawson pool of Richardson County. Skelly Oil Co., principal operator in the field, had 15 wells at the end of the 6 months. Though a number of Viola lime and Wilcox tests have been made, Hunton lime continues to be the only pay for the state. The first Viola lime test, started early in the year, was in the Dawson pool where Power Oil Co. 1 Bohrer was reported to have swabbed some 50 bbl. of oil a day in lime at 2,922 ft., but water intruded after acid treatment. Another test in the Dawson pool that attracted considerable interest was Skelly 1 Wiltse, E½ NW SE 10-1n-14e. It was drilled to the Wilcox at 3,230 ft. and showed 3 ft. of stained sand but when pipe was cemented and perforated there was only sulfur water. Viola lime and Simpson both had showings of oil. The well was a disappointment to Nebraska operators who had hoped to see a new horizon opened.

NEBRASKA
Completions by Months

	Comp.	Oil	Gas	Dry	Footage
January	4	2	0	2	8,716
February	3	1	0	2	7,306
March	4	3	0	1	8,241
April	3	1	0	2	9,810
May	1	0	0	1	1,323
June	2	1	0	1	5,268
Ttl. 1st 6 mos. 1942	17	8	0	9	40,664
Ttl. 1st 6 mos. 1941	47	17	0	30	112,424
Difference	30	9	0	21	71,760

MISSOURI, IOWA
Completions by Months

February	2	0	0	2	5,215
March	2	0	0	2	612
April	3	0	0	3	771
May	2	0	0	2	1,198
Ttl. 1st 6 mos. 1942	9	0	0	9	7,796
Ttl. 1st 6 mos. 1941	12	0	2	10	17,842
Difference	3	0	2	1	10,046

Midway and Haynesville Keep Area in Spotlight

IN the North Louisiana and Arkansas area, the Haynesville, Nebo and Midway pools were responsible for over one-half of the completed producers. The Haynesville field in Claiborne Parish was discovered in 1921 and production from the producing Buckrange sand was steadily declining. The discovery of Pettit production around 5,500 ft. revived the field and at the end of the June it accounted for fully 75 per cent of all North Louisiana activity.

The Midway field of Lafayette County, Arkansas, was opened on New Year's by a 12,000-15,000-bbl. well producing from Smackover lime at —6,032 ft. Discovery well was Barnsdall Oil Co. 1 Bond, NW SW 11-15s-24w. Development of the field has been on a narrow northwest-southeast structure with the 1 Bond approximately in the center of the pool as it lies now. The field is a little less than 2½ miles long and approximately three-fourths of a mile wide. A portion of the northern edge has been defined by three dry holes which ran low, finding the Smackover from —6,234 ft. to —6,292 ft. A half-mile south offset to the discovery well also ran low and was dry at —6,254 ft. Toward the end of June, Southwood Oil Co. was running completion tests at its 1 Hodnett, SW NW 18-15s-24w. The well flowed 30 bbl. an hour and extended the field a mile east. Production here from the Smackover at —6,211 ft., elevation 266 ft., is near the water table for the area and may limit the pool on the east. A dry hole 2 miles west of production limits the field in that direction.

The east end of the Wilcox trend in La Salle and neighboring parishes came in for considerable development during the half year with new fields coming in at South Jena, Summerville, Trout Creek and Willow Lake. Of particular interest was the Ferriday prospect test well on the line between Tensas and Concordia parishes which was completed as a Wilcox producer although it showed oil in the underlying Tuscaloosa sand, thus opening a potential new pay horizon for the area.

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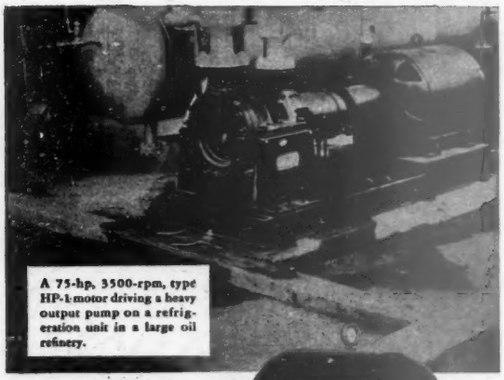

A 75-hp, 3500-rpm, type HP-1 motor driving a heavy output pump on a refrigeration unit in a large oil refinery.

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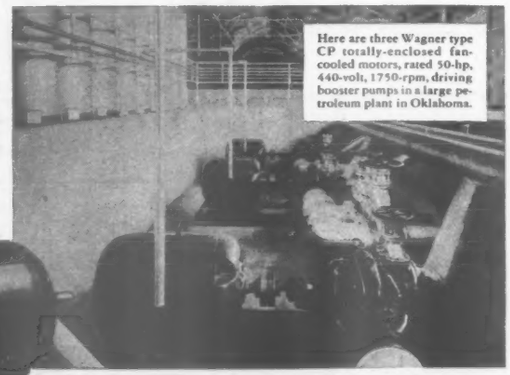

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M42-17

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PRODUCTION

(In thousands

NORTH

	Jan.-June, 1939	July-Dec., 1939	Jan.-June, 1940	July-Dec., 1940
Bellevue	122	88	87	95
Caddo	1,226	1,347	1,343	1,456
Converse	93	88	97	94
Cotton Valley	2,262	2,073	2,686	2,475
Cross Lake	937	938	902	653
Cypress Bayou	....	....	....	....
De Soto Red River	208	205	184	187
Elm Grove	46	54	53	59
Haynesville	527	512	493	492
Holly	14	15	11	17
Homer	489	455	509	509
Larto Lake	0	0	0	0
Little Creek	....	....	....	....
Lisbon	882	926	935	696
Nebo	....	....	....	51
Olla	....	....	97	882
Olla, S.	....	....	....	....
Pleasant Hill	18	17	17	17
Rodessa	5,083	4,117	3,722	3,226
Sarepta	82	71	63	53
Sligo	221	206	348	377
South Jena	....	....	....	....
Sugar Creek	60	62	124	184
Summerville	....	....	....	....
Trout Creek	....	....	....	....
Urania	490	480	462	417
Willow Lake	....	....	....	....
Zwolle	509	446	309	289
Total	13,269	12,100	12,442	12,234

ARK

Atlanta	34	75	247	486
Big Creek	....	....	6	19
Buckner	291	388	421	401
Champagnolle	296	266	218	213
Dorcheat	....	40	201	212
El Dorado	310	306	309	302
Fouke	....	....	4	42
Garland City	61	52	51	52
Irma-Troy	288	333	338	419
Lewisville	5	130	142	101
Lisbon	45	45	41	39
Macedonia	....	....	....	....
Magnolia	804	2,785	3,664	3,738
McKamie	....	....	3	68
Midway	....	....	....	....
Mount Holly	....	....	....	....
Nick Springs	....	....	49	134
Schuler	3,314	3,107	3,368	3,342
Smackover	3,053	3,032	2,831	2,797
Stephens	97	99	98	99
Urbana	208	184	168	314
Village	111	192	235	183
East Schuler	....	....	....	....
Rodessa	872	560	400	317
Patton	....	....	....	....
New London	....	....	....	....
Total	9,789	11,594	12,792	13,280

MISS

Pickens	....	....	59	228
Pickens-Sharpsburg	....	....	....	....
Tinsley	....	103	1,276	2,720
Miscellaneous	....	....	....	....
Total	....	103	1,335	2,948

NORTH LOUISIANA

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	dry
Bellevue	3	1	5	0	2
Caddo	30	18	1,030	0	12
Carterville	2	1	10	0	1
Converse	1	1	25	0	0
De Soto-Red River	2	0	0	0	2
Haynesville	58	57	28,953	0	1
Hemphill	1	1	129	0	0
Homer	1	1	12	0	0
Lisbon	1	1	15	0	0
Little Creek	11	8	949	0	3
Monroe	3	0	0	0	3
Nebo	46	39	5,207	0	7
Olla	9	3	319	0	6
Sligo	3	3	145	0	0
Sugar Creek	2	1	94	0	1
Trout Creek	4	1	290	0	3
Vivian	1	1	30	0	0
Zenoria	3	3	223	0	0
Wildcats	49	3	232	0	46
Others	9	5	75	0	4
Total	239	148	37,743	0	91

Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	59	28	0	31	193,130
February	47	25	0	22	194,877
March	30	20	0	10	119,685
April	45	32	0	13	197,740
May	28	23	0	5	126,552
June	30	20	0	10	141,673
First half 1942	239	148	0	91	973,657

ARKANSAS

Summary of Wells Completed First Half of 1942

Field—	Comp.	Oil	Prod.	Gas	Dry
Atlantic	1	1	519	0	0
Big Creek	1	1	55	0	0
Buckner	2	1	104	0	1
Dorcheat	4	3	406	0	1
El Dorado, East	2	1	32	0	1
Fouke	2	2	340	0	0
Hillsboro	2	2	40	0	0
Macedonia	4	1	273	1	2
McKamie	2	0	0	1	1
Mount Holly	3	3	250	0	0
Midway	22	16	7,974	0	6
New London	1	1	150	0	0
Nick Springs	1	0	0	0	1
Patton	1	1	57	0	0
Rainbow	1	1	116	0	0
Schuler	1	0	0	0	1
Schuler, East	5	2	221	2	1
Smackover	3	3	102	0	1
Stephens	6	2	565	0	3
Wildcats	11	2	773	2	7
Others	3	3	140	0	0
Total	78	46	12,117	6	26

Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	13	5	3	5	80,631
February	10	2	3	5	48,536
March	18	14	0	4	107,738
April	14	9	0	5	81,087
May	10	5	0	5	60,276
June	13	11	0	2	70,372
First half 1942	78	46	6	26	448,640

MISSISSIPPI

Completions by Months

	Comp.	Oil	Gas	Dry	Footage
January	8	6	0	2	36,534
February	9	5	0	4	41,527
March	5	2	0	3	26,101
April	9	4	0	5	50,245
May	3	0	0	3	13,918
June	3	0	0	3	19,885
Ttl. 1st 6 mos. 1942.	37	17	0	20	188,210
Ttl. 1st 6 mos. 1941	119	89	1	29	360,271
Difference	82	72	1	9	172,061

ALABAMA

Completions by Months

	Comp.	Oil	Gas	Dry	Footage
January	1	0	0	1	376
April	1	0	0	1	4,043
Ttl. 1st 6 mos. 1942.	2	0	0	2	4,419
Ttl. 1st 6 mos. 1941	3	0	0	3	3,299
Difference	1	0	0	1	1,120

1939-1942

of barrels)

LOUISIANA

Jan.-June, 1941	July-Dec., 1941	Jan.-June, 1942	Number of wells Jan. 1, 1939	Jan. 1, 1941	Jan. 1, 1942	July 1, 1942
109	110	110	141	147	170	171
1,505	1,591	1,316	1,265	1,465	1,629	1,647
100	78	65	88	82	84	85
2,474	2,711	2,568	157	168	174	174
514	511	459	7	50	50	50
.....	45	27	0	0	2	3
184	182	180	166	129	130	130
56	54	49	35	36	36	36
472	467	1,086	291	284	284	341
18	13	18	5	4	4	4
517	539	521	355	349	356	357
.....	11	15	0	0	2	3
40	373	665	0	0	49	57
518	411	371	250	212	212	213
257	687	1,427	0	7	78	117
1,864	2,378	2,333	0	93	189	192
13	35	.....	0	0	13	13
17	15	133	29	29	31	30
2,771	3,500	2,174	471	444	444	432
46	42	43	44	30	31	30
361	459	.....	21	35	55	58
.....	.....	84	0	0	0	3
270	249	197	3	20	29	30
.....	.....	100	0	0	0	2
.....	.....	54	0	0	2	2
416	401	390	256	272	281	282
.....	.....	52	0	0	0	3
222	190	127	62	60	61	61
12,744	15,052	14,564	3,646	3,916	4,396	4,526

ARKANSAS

488	519	511	1	16	21	21
19	23	26	0	3	1	2
415	408	410	9	23	27	28
184	153	138	76	79	79	78
303	369	355	0	8	18	20
274	310	242	265	255	271	262
55	95	130	0	2	7	7
41	40	42	19	15	15	15
295	363	298	83	105	118	118
65	40	34	0	18	18	17
35	33	29	144	136	136	130
.....	116	204	0	0	6	11
3,586	3,532	3,263	6	115	116	115
331	509	483	0	3	16	16
.....	.....	307	0	0	0	17
.....	12	72	0	0	1	5
186	130	77	0	12	14	14
2,993	3,033	2,897	131	174	174	170
2,719	2,636	2,462	1,747	1,605	1,619	1,582
93	151	236	190	198	208	200
385	444	482	34	52	67	68
187	176	194	4	12	13	11
2	38	90	0	0	4	8
282	225	198	97	77	77	65
.....	18	.....	0	0	1	0
.....	.....	10	0	0	0	2
12,938	13,363	13,190	2,806	2,906	3,027	2,981

MISSISSIPPI

121	85	68	0	4	4	4
.....	.....	99	0	0	0	6
4,144	11,420	15,198	0	103	320	345
.....	.....	3	0	0	0	0
4,265	11,505	15,368	0	107	324	355

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Primary Refinery-Product Prices Cling to Ceilings

By H. STANLEY NORMAN

Disrupted transportation conditions forced radical changes in refinery operations during the first half of 1942. But prices on a majority of the civilian products are clinging to ceiling levels dictated by the Office of Price Administration.

There were cycles of softness and strength on the Gulf Coast motor-fuel market, dependent chiefly on the arrival of tanker convoys to load lend-lease material.

East Coast tank-car quotations did not waver from the maximums permitted by OPA, a reflection of uneconomic transportation conditions forced upon the industry.

Pacific Coast and interior refinery prices were mostly steady particularly on all grades of fuel oil, the supply of which was insufficient to satisfy all consumers.

Chief products, from gasoline down through residual fuel oil, were sold at slightly higher average prices during the first 6 months of this year than during the preceding 3 years.

PRIMARY refinery-market prices of the petroleum industry carried through the first half of 1942 with minimum change from quotations prevailing during the final quarter of the preceding year. Indications are that future prices will cling fairly close to ceilings established by the Office of Price Administration and it may be assumed, industry economists contend, that any changes will be upward.

All aspects of refinery markets, other than prices, underwent radical metamorphoses as manufacturing facilities, yields, transportation and distribution yielded to exigencies of war economy. Refiners throughout the country, particularly on the Gulf Coast, adjusted their manufacturing operations to cope with reduced requirements for motor fuel and to meet higher demand for burning oils. None of the Gulf Coast refiners, with the possible exception of one or two plants working on Army, Navy and lend-lease contracts, are making more than 80 per cent of their prewar yields of regular motor fuel. Some Gulf refiners have adjusted their manufacturing schedules down to a theoretical yield of 65 per cent of normal gasoline.

Gasoline Yields Lowered

The current manufacturing schedules in the interior refinery centers is aimed at an average reduction of 20 per cent in motor-fuel production per barrel of crude charged to stills.

Since the early part of January, coastal refiners both on the Atlantic and Pacific have been largely dependent on overland movement of products to markets customarily served by deep-water tankers. Convoy protection and intensified scouting operations have diminished hazards of coastwise shipping through American waters in recent weeks and moderate movement between primary supply centers and consuming areas has been resumed. A definite limit at only a fraction of normal traffic between coastal refining centers and their consuming outlets is imposed by the insufficiency of tankers. A majority of the faster and more efficient tankers in the American fleet are now engaged in supplying United Nations' forces in Asia, Africa, Oceania and other parts of the world.

Emphasis on the production of fuel oil and retrogression of gasoline yield is the result of two separate but related developments both of which are chargeable to the war. Industrial consumption of fuel oils is at the highest rate in the history of the petroleum industry. Related consumption, including that required for transportation of raw materials to factories and subsequent distribution of war commodities, movement of troops, naval units and the establishment of fuel dumps in the zones of conflict are all contributing to unprecedented burning-oil demand.

Crude-oil runs to refineries are currently more than 500,000 bbl. per day below the rate of 1941 operations. Crude runs dipped under the 1941 curve for the first time in the middle of March and, since that time, the lag this year has been consistently widened. Stocks of several products, chiefly residual fuel, have dwindled to a point where further reductions are opposed to flexibility of supplies and an increment in refinery operations during the last 6 months is probable.

Transportation Guiding Factor

Fluctuations in the OPA's control of refinery-product prices authorized during the first half of this year are geared to the increasing costs of transporting materials to the East Coast. Prices have been rigidly controlled at most of the manufacturing centers, restricting the benefits from price advances to the East Coast distributors. Restrictions have contributed to static refinery quotations on practically all products outside of the East Coast district. In the case of eastern refiners, the advances totaling 2.6 cents per gallon on light burning oils, 45 cents per barrel on residuals and 3.7 cents on gasoline have been offset by the higher cost of transporting crude by railroad to their plants.

Aviation gasoline with an octane rating of 91 or higher, its components, toluene made from petroleum and synthetic-rubber ingredients are exempt from the OPA's price ceilings. However, refiners producing the essential war materials are dealing exclusively with the Government and this exemption has had little impact on the general market for petroleum products.

Natural Gasoline Exception

Natural gasoline manufactured in the Mid-Continent and Southwest is the glaring exception to the generalization that petroleum prices have held closely to the OPA ceilings. The Oklahoma (Group 3) quotation for 26-70 natural gasoline at the price-basing date of October 1 was about 5 cents per gallon. Weekly declines in the spot quotations for natural gasoline developed before the close of January, indicating a sensitive response to the cessation of coastwise cargo shipments. The price continued its downward movement until reaching a low of 2.375 cents per gallon at the end of February. Prices recovered slightly in May and at the end of June but the current quotation is about 0.75 cent per gallon below the comparable period in 1941. The average price for 26-70 natural gasoline in Oklahoma, Kansas, Texas, Arkansas and Louisiana during the first 6 months this year is the same as reported for all of 1941. Motor-fuel rationing in the East Coast states and tire restrictions in all parts of the country are cutting gasoline demand approximately 10 to 20 per cent below the consumption last year. This reduction during the summer months is preventing the customary increase in natural-gasoline prices this year and, unless the industry secures a stronger position in the production requirements for synthetic rubber the outlook for the remainder of the year does not compare favorably with the second half of 1941.

AVERAGE PRICES ON IMPORTANT REFINERY PRODUCTS TO JULY 1, 1942

(Prices per gallon in tank cars at plants except fuel oil which is quoted on a barrel basis.)

Mid-Continent, Oklahoma (Group 3) Basis

	1942	1941	1940	1939
Regular gasoline	$0.0579	$0.0493	$0.0451	$0.0487
Nat. gasoline (26-70)	.0284	0.284	.0197	.0317
Kerosene (41-43)	.0450	.0420	.0382	.0367
Fuel oil (No. 6)	.8750	.6769	.4875	.4597
Crude (36° A.P.I.)	1.1700	1.1120	1.0200	1.0200

Gulf Coast

Regular gasoline	$0.0583	$0.0567	$0.0484	$0.0658
Kerosene (41-43)	.0395	.0385	.0425	.0403
Distillate fuel (No. 2)	.0388	.0357	.0373	.0335
Bunker C (residual)	.8750	.8740	.8794	.8120
Crude (36° A.P.I.)	1.4000	1.3400	1.2000	1.3000

California

Regular gasoline	$0.0644	$0.0562	$0.0636	$0.0621
Natural gasoline	.0475	.0450	.0516	.0598
Kerosene (38-40)	.0475	.0450	.0450	.0473
Gas oil (30-40)	.0338	1.1000	1.1300	.9466
Bunker fuel	1.4000	.....	.....	.....

Pennsylvania

Regular gasoline	$0.0675	$0.0630	$0.0608	$0.0453
Kerosene (45)	.0612	.0523	.0485	.0501
Bright stock (10-15 pp.)	.3050	.1900	.2053	.2079
Crude (Bradford)	2.9300	2.4100	2.3300	2.0600

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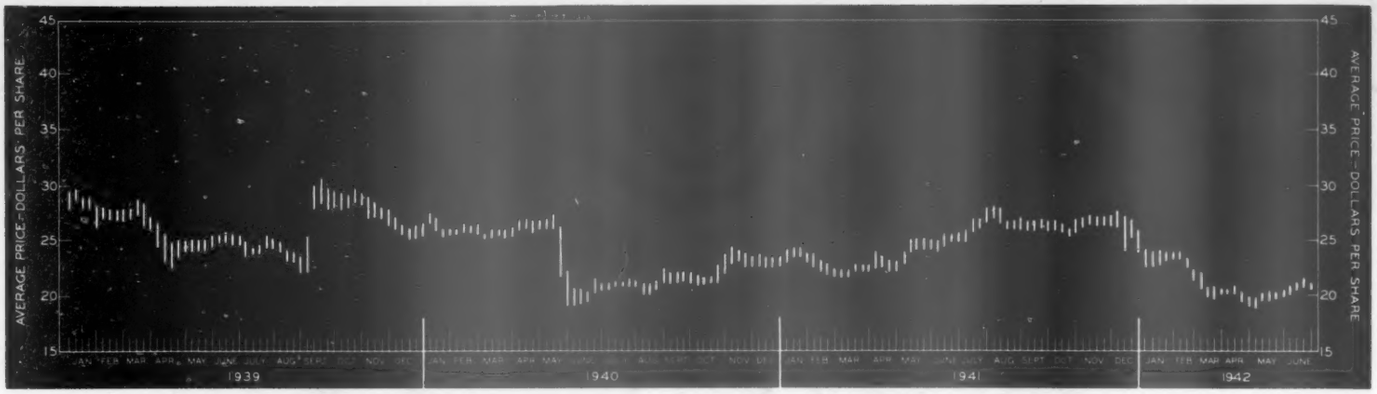
The ever-mounting demand for prime high-octane gasoline for our air services, and the problem involved, make it necessary for the oil industry to utilize every possible means for increasing efficiency and yield of existing equipment. Which brings to the forefront the vital need for correct heat insulations.

In meeting this need, CAREY is making valuable contributions—supplying insulations that are durable and dependable as well as efficient—that have demonstrated their ability to provide for the higher temperatures and pressures required in high-octane refining.

In the interest of the efficiency of equipment now in service, it is important that you make a careful analysis of the condition of the insulation—determine whether or not it is meeting today's demands. A Carey representative will be glad to consult with you.

Carey HEAT INSULATIONS make any refining process more efficient —more economical—more productive.
You can depend on CAREY for the right insulation for every need of the industry.
A nation-wide organization is ready to se rve you. For details, address Dept. 34.

THE PHILIP CAREY MFG. COMPANY
Dependable Products Since 1873 Lockland, Cincinnati, Ohio
IN CANADA: THE PHILIP CAREY COMPANY, LTD. Office and Factory: LENNOXVILLE, P. Q.



Weekly fluctuation of average prices on 30 active oil company securities during the past 3½ years

Stock Values Show Modest Recovery

(Averages Compiled by Carl H. Pforzheimer & Co.)

1942	High	Low	Close
January 3	24.10	22.39	23.29
January 10	23.92	22.55	22.81
January 17	24.00	22.81	23.49
January 24	23.84	23.06	23.50
January 31	23.90	23.25	23.44
February 7	23.90	23.25	23.47
February 14	23.37	22.53	22.81
February 28	22.14	21.37	21.90
March 7	21.99	20.47	20.67
March 14	20.77	19.78	19.95
March 21	20.75	19.63	20.36
March 28	20.52	20.00	20.16
April 4	20.53	20.04	20.31
April 11	20.79	20.02	20.12
April 18	20.23	19.42	19.57
April 25	19.90	18.79	18.97
May 2	19.72	18.69	19.54
May 9	20.22	19.44	20.14
May 16	20.34	19.53	19.87
May 23	20.24	19.59	19.95
May 30	20.30	19.74	20.09
June 6	20.88	19.97	20.83
June 13	21.17	20.53	20.79
June 20	21.56	20.71	21.14
June 27	21.06	20.44	20.67

1941	High	Low	Close
January 4	24.09	22.97	23.77
January 11	24.41	23.49	24.01
January 18	24.27	23.22	23.45
January 25	23.75	22.97	23.52
February 1	23.70	22.56	22.88
February 8	23.06	22.39	22.88
February 15	22.90	21.84	21.94
February 22	22.31	21.75	22.07
March 1	22.35	21.82	22.04
March 8	22.38	21.73	22.14
March 15	22.74	22.05	22.45
March 22	22.87	22.21	22.72
March 29	22.76	22.14	22.49
April 5	23.92	22.48	23.69
April 12	23.56	22.43	22.52
April 19	22.95	22.15	22.45
April 26	23.19	22.22	22.81
May 3	23.92	22.71	23.82
May 10	25.22	23.82	24.84
May 17	25.09	24.18	24.53
May 24	25.37	24.27	24.70
May 31	24.92	24.15	24.35
June 7	24.80	23.85	24.46
June 14	25.35	24.37	25.12
June 21	25.31	24.67	24.88
June 28	25.53	24.73	25.08

Thirty companies whose common stocks make up the average values shown above: Amerada, Atlantic, Barnsdall, Consolidated, Continental, Creole, Gulf, Humble, Imperial, International, Mid-Continent, Ohio, Phillips, Plymouth, Pure Oil, Seaboard Oil, Shell Union, Skelly, Socony, South Penn, Standard of California, Standard of Indiana, Standard of Kentucky, Standard of New Jersey, Standard of Ohio, Texas Co., Texas Pacific Coal & Oil Co., Tide Water Associated, and Union Oil Co.

The new Jones coupling, shown above, has built into it a smooth hardened and ground surface to resist wear and fatigue.

The same coupling (above) that has been pounded has the hard case shattered and cannot effectively resist fatigue.

Picture of a MAN AT WORK ....FOR THE AXIS!

The photograph above is from a motion picture made by The S. M. Jones Company a few years ago to show proper care and handling of sucker rods. The man is "Rodney", a ficticious, humorous character, who did everything wrong. However, abusive practices have proven costly. Sucker rod steel is as important to Victory as rubber—and who can estimate the value of oil in relation to the Victory Effort?

Get Better Service, Longer Life, By Following These Simple Rules:

1. Use proper snap wrenches—do not hammer couplings.
2. Cull out bent, pitted or fatigued rods.
3. Be sure pins, boxes and couplings are clean before re-running. One ruined joint means 25 to 50 feet of ruined rods.
4. Rod Hangers should be used wherever possible. When no hanger is available rods should be pulled and laid down in singles.
5. Rods should be properly supported at at least four points when laid down or transported.

The S. M. JONES Co.

JoneSuckeRods

General Office and Factory, Toledo, Ohio — Sales Office, McBirney Bldg., Tulsa, Okla.

On Active Service

on the Production Front

PURE OIL INDUSTRIAL LUBRICANTS

Thousands of plants in American industry, now devoted to the production of war materials, are depending on Pure Oil Industrial Lubricants for the efficient, economical lubrication of the machines that build the war machines.

These specialized Pure Oil lubricants are fitted to the requirements of individual machines by Pure Oil's staff of lubricating engineers, trained and experienced in solving lubrication problems. The services of these men is added insurance for minimum maintenance expense, low operating cost.

And in these times, when the conservation of lubricants is of the utmost importance, this service is another good reason why plant superintendents have found it pays to BE SURE WITH PURE.

THE PURE OIL PURE COMPANY, U.S.A.

Be *sure* with Pure

Pure Oil Industrial Lubricants include Air and Gas Compressor Oils . . . Cutting and Grinding Oils . . . Diesel Engine Oils . . . Electric Motor and Generator Oils . . . Farm Machinery Oil . . . Form and Mold Oil . . . Ice Machine Oils . . . Industrial Greases . . . Marine Engine Oils . . . Machine Shop Oils . . . Quenching and Tempering Oils . . . Steam Cylinder Oils . . . Steam Turbine Oils . . . Textile Machinery Oils . . . Transformer Oils . . . Water Turbine Oils.

Static Crude Prices In Prospect For Producers

By H. STANLEY NORMAN

AN indefinite projection of the static crude-price curve is in prospect for the industry, certainly through the third quarter of this year and most likely for a longer period. This conclusion is based on the past record of the Office of Price Administration and on that federal agency's adamant attitude toward most efforts of crude producers to pierce the ceilings imposed by Order 88 and its amendments.

Producers of Pennsylvania Grade crude were the only operators to win their arguments for higher prices during the first 6 months of this year. The general advance was given as an incentive to increase exploration and exploitation activities. Other groups of producers and a few individual purchasers tried to gain OPA approval on higher crude postings, particularly in the Panhandle and North Texas, but their pleas were denied.

Purchasers of Pennsylvania Grade crude oil in the eastern states were authorized to advance prices 25 cents per barrel March 26, lifting the top posting in Bradford to $3, which was the the highest quotation in the area since 1930. Another increase of 25 cents per barrel was promised Pennsylvania Grade producers when production reaches a daily average of 85,000 bbl. for a sustained period of 3 months. Production there is hovering around 80,000 bbl. daily and gives scarcely any indication of attaining the higher goal under the present restrictions on development and equipment.

The advance of 3 cents per barrel authorized late last year in 17 North Texas producing counties was extended to 6 West Central Texas counties at the start of the year but the adjustment was made retroactive to December 11, 1941.

All other variations in crude prices during the first half of 1942 were minor adjustments of a local character. Prices were posted for new fields but, without exception, they clung to the general levels previously paid for crude of similar quality.

As demand for the petroleum industry's war materials expands and as new facilities now under construction start manufacture of special fuels and chemicals, it is possible that producers of especially desirable crudes will receive price incentives to stimulate yields. Other developments which may exert influence on the future crude-price structure are the networks of new and relocated pipe lines along with other moves under way for increasing petroleum deliveries to the eastern states. With a greater degree of flexibility in the overland movement of crude and products, it is entirely possible that OPA may be persuaded to join with other federal agencies in moves to stimulate production where it would be most accessible to the shortage areas. The same potential considerations apply to the possible future need for larger production of crudes that yield the highest percentages of war materials. Still, most of the petroleum industry's war-plant construction contracts have been awarded on the basis of adequate proven supplies of raw material.

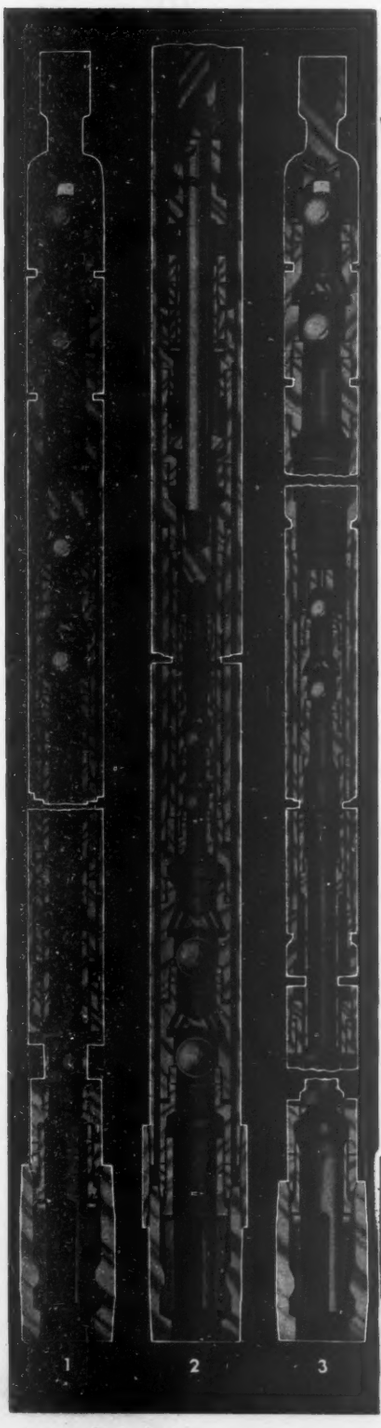
The following digest of all company and government actions pertaining to the crude-oil market during the first 6 months indicates the rigidity of the OPA price ceiling.

The last general change in crude prices, outside of the Pennsylvania Grade section and the few local revisions reviewed in this account of trends, was made in May 1941. Consequently, details of changes customarily published in the semiannual and annual numbers is confined this year to the eastern states. Crude prices for the principal fields, most of which have remained constant since the middle of 1941 are published each month in the Journal and are carried on Pages 148, 150, 151 of this issue.

Digest of Price Actions

January 1.—OPA included Comanche, Fisher, Haskell, Jones, Taylor and Throckmorton counties, Texas, in its authorization for a 3-cent advance December 11, 1941, in 17 other North Texas counties. The six-county adjustment was retroactive to December 11, 1941.

January 20.—Sinclair Prairie Oil Marketing Co. posted price of $1.18 for crude below 50 gravity in the Chapel Hill field, Anderson County, Texas.



PACIFIC OPERATORS GET LONGER PUMP LIFE.....

Longer pump life with proportionately lower costs is the experience of operators who specified "PACIFIC" for Deep Well Service. With critical materials being taken for war production, Pacific's low maintenance and low replacement requirements mean efficient pumping for the duration.

PACIFIC Pump life is multiplied because the pumps can be completely reconditioned as many as four or five times. Liners are ground up, plungers are ground down. Pumps are refitted to close tolerances so one pump does the work of several. This Service is available wherever Pacific Pumps are sold.

The right pump can be selected to meet successfully the particular combination of bottom hole condition of your well.

Write for Bulletin giving complete details.

PACIFIC PUMP WORKS

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MID-CONTINENT PUMP SUPPLY CO.
Tulsa, Oklahoma

PACIFIC

DEEP WELL PLUNGER PUMPS

PENNSYLVANIA AND SOUTHEASTERN OHIO	January 1	March 26
Bradford, Pennsylvania	$2.75	$3.00
Allegany, New York	2.75	3.00
Pennsylvania Grade in Southwest Pennsylvania lines	2.40	2.65
Pennsylvania Grade in Eureka lines	2.34	2.59
Corning Grade in Buckeye lines (Ohio)	1.31	1.31
Pennsylvania Grade in National Transit lines:		
Bradford field	2.75	3.00
Group A: Includes Cochran, Franklin, Hamilton and Doolittle	2.68	2.93
Group B: Includes Titusville district	2.67	2.92
Group C: Includes Turkey and Tidioute districts	2.66	2.91
Group D: Includes Bear Creek and Porkey districts	2.65	2.90
Group E: Includes Eldeneau, Bull Creek, Rough Run, Carbon, Dipner, Bredin, McJunkin, Kenerdell, Emlenton, Tiona, Lacy and Kinzaw	2.63	2.88
WEST VIRGINIA		
Cabin Creek and Kelly Creek	$2.34	$2.59
Eureka (Pennsylvania Grade)	2.34	2.59

and $1.30 per barrel for crude above 50 gravity.

February 2.—Sinclair Prairie Oil Marketing Co. posted $1.25 for crude above 50 gravity in Chapel Hill field.

February 18.—Shell Oil Co., Inc., posted a flat price of $1.25 in the Mercy field, San Jacinto County, Texas.

March 1.—Stanolind Oil Purchasing Co. posted Gulf Coast gravity scale, ranging from $1.06 for below 20-gravity crude to $1.48 for 40 gravity and above, in the West Beaumont field, Texas.

March 19.—Sun Oil Co. posted Garcia crude at $1.35 and Yturria at $1.45, both in Starr County, Texas.

March 23.—OPA denied request of Texas operators for removal of 10-cent differential between Panhandle crude prices and those prevailing in the Mid-Continent. OPA held that strong economic factors justify differential but declined to pass on what margin of difference was proper.

April 1.—Magnolia Petroleum Co. included Pecos and Andrews counties, West Texas, in regular Permian basin postings. Company's prices previously applied only to Crane, Upton, Howard, Glasscock, Mitchell, Winkler, Cochran, Hockley, Yoakum and Gaines counties.

April 9.—Stanolind Oil Purchasing Co. posted $1.08 for 21-gravity crude at Lake Creek field, Montgomery County, Texas. Scale increases at increments of 2 cents to $1.48 for 40 gravity and above.

April 14.—Gulf Refining Co., crude-oil purchasing division, posted $1.18 for Chapel Hill crude, below 50 gravity; $1.30 for above 50 gravity.

April 18.—OPA authorized price ranging from $1.18 for 25-gravity oil to $1.48 for 40 gravity and above, in Ritchie field, Acadia Parish, Louisiana, in contrast to a previous flat posting of $1.08. Ruled that previous price did not reflect competitive market conditions or comparable value of crude.

May 12.—OPA authorized upward adjustment and pegged price at $1.25 per barrel for 40-gravity oil in Carter County, Oklahoma; that part of Tussy field in Garvin County, and crudes in Healdton and Oscar fields, Oklahoma, with customary differentials for lower gravities.

May 12.—Loco Hills field, Eddy County, New Mexico, pegged at $1.12 for crude above 40 gravity with customary differentials for lower gravity.

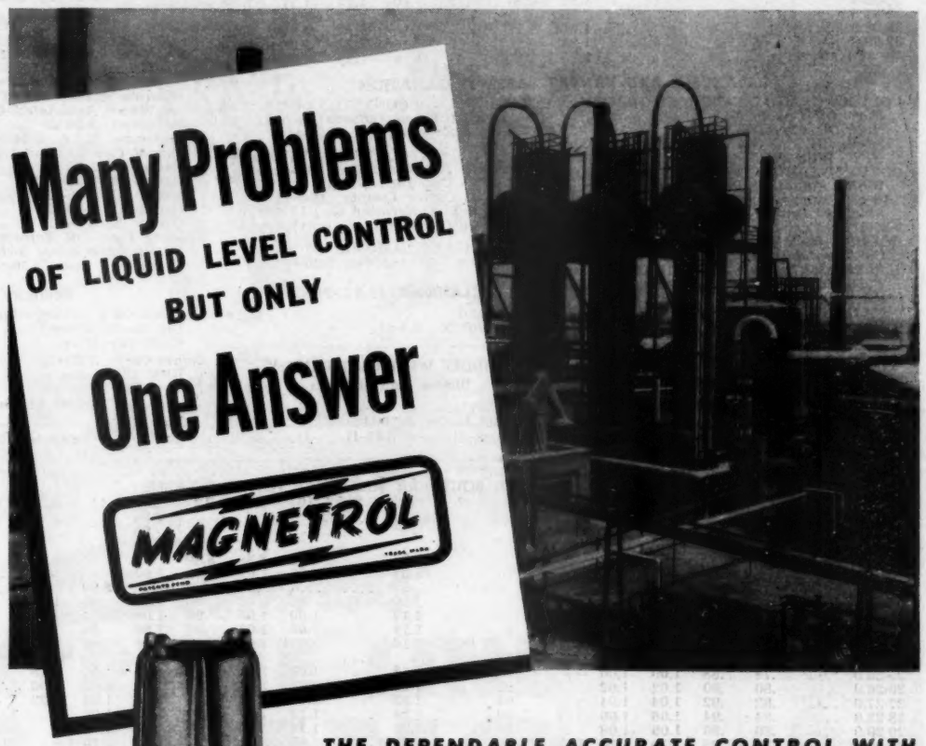
May 21.—Gulf Refining Co., crude-oil purchasing division, clarified division between Hull (old) and Hull (new) crudes. Hull (old) crude, taking 8-cent higher price, was specified as having "a 10 per cent fraction secured from laboratory distillation, having average viscosity of 500 Saybolt Universal seconds at 100° F., and, further, a composite lubricating stock from this distillation having a viscosity of 250 Saybolt Universal seconds at 100° F., shall be not less than 15 per cent by volume of the crude and shall test not heavier than 18.5 A.P.I. gravity.

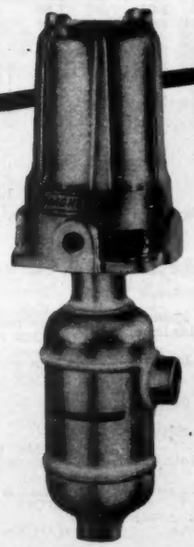
May 21.—Standard Oil Co. of Louisiana posted gravity table, ranging from 98 cents for crude below 25 gravity to $1.30 for 40 gravity and above in the Pine Prairie and University (Baton Rouge) fields, subject to OPA disapproval.

May 23.—OPA approved renewal of contract for sale of Houston Oil Co.'s East Texas crude at Tank 11, Peterson tank farm, to Shell Oil Co., Inc., at posted field price plus 5 cents, continuing a previous contractural relationship.

May 25.—Pure Oil Co. posted West Gueydan crude, Vermilion Parish, Louisiana, at price range of 90 cents for below 21 gravity to $1.30 for 40 gravity and higher.

July 2.—OPA approved maximum price of $1.48 per barrel for 40-gravity crude in University field, East Baton Rouge Parish, Louisiana, the level at which 75 per cent of the production was selling. Ruling permitted Standard of Louisiana to raise its postings, meet price paid by Sun Oil Co.





Model No. 750-EP Magnetrol

This is a completely welded control unit with explosion-proof head for all oil and gas piping or applications in hazardous locations. Maximum pressure is 750 lbs. Maximum temperature 750° F. Available with one or two level stage control. Operating differential ¾" to 3". One of many different models.

THE DEPENDABLE ACCURATE CONTROL WITH

NO Bellows, NO Packing, NO Diaphragm, NO Electrodes

● Whatever your problems of liquid level control, you can depend on MAGNETROL to provide the practical, dependable answer. This liquid level control with its unique packless, bellowless construction eliminates the major sources of trouble encountered with the ordinary control.

The MAGNETROL line includes models engineered for a wide variety of applications throughout the oil industry. With dependable operation more important now than ever before, you will want all the facts on this modern control. Schaub engineers will be glad to recommend or design the right unit or control system to meet your needs. Write us today.

TYPICAL MAGNETROL APPLICATIONS

- ✓ Level alarm and engine shut-off on high and low pressure absorber and reabsorber residue scrubbers.
- ✓ Liquid level controls on sales gas scrubbers.
- ✓ High level alarm on inlet scrubbers.
- ✓ Level alarm and engine shut-off on 2nd and 3rd stage recompressor suction units.
- ✓ Low level alarm on de-ethanizer reflux accumulator.
- ✓ High level alarm on suction traps.
- ✓ High level alarm and engine shutoff on propane compressor inlet scrubber.

FRED H. SCHAUB ENGINEERING CO., INC.
327 W. Huron Street, Chicago, Illinois

CRUDE PRICES . . .

OKLAHOMA AND KANSAS GRAVITY TABLES

	1	2	3	4	5	6	7
Below 21					$.85	$.75	
21-21.9					.87	.78	
22-22.9					.89	.81	
23-23.9					.91	.84	
24-24.9					.93	.87	
Below 25	$.93			$.86			
25-25.9	.95	$.95		.88	.95	.90	
26-26.9	.97	.97		.90	.97	.93	
27-27.9	.99	.99		.92	.99	.96	
28-28.9	1.01	1.01	$1.01	.94	1.01	.99	
29-29.9	1.03	1.03	1.03	.96	1.03	1.02	
30-30.9	1.05	1.05	1.05	.98	1.05	1.05	$1.05
31-31.9	1.07	1.07	1.07	1.00	1.07	1.07	1.07
32-32.9	1.09	1.09	1.09	1.02	1.09	1.09	1.09
33-33.9	1.11	1.11	1.11	1.04	1.11	1.11	1.11
34-34.9	1.13	1.13	1.13	1.06	1.13	1.13	1.13
35-35.9	1.15	1.15	1.15	1.08	1.15	1.15	1.15
36-36.9	1.17	1.17	1.17	1.10	1.17	1.17	1.17
37-37.9	1.19	1.19	1.19	1.12	1.19	1.19	1.19
38-38.9	1.21	1.21	1.21	1.14	1.21	1.21	1.21
39-39.9	1.23	1.23	1.23	1.16	1.23	1.23	1.23
40 and above	1.25	1.25	1.25	1.18	1.25	1.25	1.25

OKLAHOMA AND KANSAS TABLE EXPLANATION

COLUMN (1) MID-CONTINENT GRADES:
Pure Oil Co., 5-20-41.
Gulf Oil Corp., 5-20-41.
Skelly Oil Co. (Kansas only), 5-19-41.
H. F. Wilcox Oil & Gas Co., 5-20-41.

COLUMN (2) MID-CONTINENT GRADES:
White Eagle Oil Purchasing Co., Inc., 5-19-41, Kansas only.
Sinclair Prairie Oil Marketing Co., 5-20-41.

COLUMN (3) MID-CONTINENT GRADES:
Continental Oil Co., 5-19-41.
Phillips Petroleum Co., 5-19-41.
Tide Water Associated Oil Co., 5-20-41.

COLUMN (4) JACKSON, TILLMAN COUNTIES:
Gulf Oil Corp., 5-20-41.

COLUMN (5) MID-CONTINENT GRADES:
Standard Oil Co. (Indiana), 5-20-41.
National Refining Co., 5-20-41.

COLUMN (6) MID-CONTINENT GRADES:
Magnolia Petroleum Co., 5-21-41.
Shell Oil Co., Inc., 5-19-41.
Shell, in Carter County, 12-5-41.
Ben Franklin Refining Co., 12-4-41.
Carter Oil Co. (Oklahoma only), 5-19-41.

COLUMN (7) OKLAHOMA:
Champlin Refining Co., 5-20-41.

OKLAHOMA FLAT PRICE

Cumberland $1.14
Pure Oil Co., 9-4-41.

Canadian Fields

Imperial Oil, Ltd.:
Petrolia, 11-6-39 ..... $2.10
Oil Springs, 11-6-39 ..... 2.07
Bothwell, 11-6-39 ..... 2.10
Turner Valley, 7-16-41 ..... $1.35-1.97

MIDDLE WEST FLAT PRICES

Illinois and Indiana

Ohio Oil Co.:
Illinois basin, 5-21-41 ..... $1.37
Eastern Illinois, 5-21-41 ..... $1.22
Western Indiana, 5-21-41 ..... 1.22
Magnolia Petroleum Co.:
Illinois basin, 5-21-41 ..... $1.37
Carter Oil Co.:
Illinois (Louden), 5-21-41 ..... $1.37
Sohio Corp.:
Illinois basin, 5-21-41 ..... $1.37
Texas Co.:
Illinois basin 5-21-41 ..... $1.37
Gulf Refining Co.:
Illinois basin 5-21-41 ..... $1.37

Michigan

Simrall Corp., 5-27-41:
Greendale, Porter, Vernon, Crystal, and Wise $1.44
Buckeye, Bentley, Edenville, Beaverton, and Monitor (sweet) .. 1.42
Freeman, Redding, Lincoln, and Winterfield 1.39
Hamilton-Grout 1.29
West Branch-Arenac 1.24
Sohio Corp., 5-1-41:
Bloomingdale-Columbia $1.38
Mid-West Refineries, Inc., 5-1-41:
Kent County $1.38
Pure Oil Co., 5-27-41:
Sherman $1.39
Midland (Midland County) 1.44

EASTERN STATES

Pennsylvania and Ohio

South Penn Oil Co.:
National lines, 3-26-42 ..... $3.00
Southwest Penn, 3-26-42 ..... 2.65
Eureka lines, 3-26-42 ..... 2.59
Corning grade, 5-27-41 ..... 1.31
Tide Water Associated Oil Co.:
Bradford, 3-26-42 ..... $3.00
Allegany, N. Y., 3-26-42 ..... 3.00
Pennzoil Co.:
Group A, 3-26-42 ..... $2.93
Group B, 3-26-42 ..... 2.92
Group C, 3-26-42 ..... 2.91
Group D, 3-26-42 ..... 2.90
Group E, 3-26-42 ..... 2.88
Quaker State Oil Refining Corp.:
In Buckeye lines, 3-26-42 ..... $2.55
In Eureka lines, 3-26-42 ..... 2.59

Kentucky

Ashland Oil & Transportation Co., 6-19-41:
Big Sandy River $1.38
Kentucky River 1.43
Sohio Corp., 5-21-41:
Birk City $1.32

West Virginia

Pure Oil Co.:
Cabin and Kelly Creek, 3-27-42 .. $2.59
Smackover (heavy) $0.83
Dorcheat 1.15
Phillips Petroleum Co., 5-22-41:
Smackover (heavy) $0.83
Placid Oil Co., 5-22-41:
Tullos-Urania (5-21-41) $1.15
Cotton Valley dist. (above 60°) 1.30
Cotton Valley (Holloway sand) .. 1.25
Cotton Valley (Bodcaw-D sands) . 1.20
Pure Oil Co.:
Bosco (5-21-41) $1.14
Sweet Lake (5-22-41) 1.06
Creole (5-22-41) 1.16
Republic Oil Co., 6-2-41:
Nevada County, Arkansas $0.80
Shell Oil Co., Inc., 5-20-41:
Happytown $1.15
Standard Oil Co. of Louisiana, 5-22-41:
Big Creek, Dorcheat, McKamie (sour) $1.15
Smackover (heavy) ..... .83
Cotton Valley distillate (9-1-41) .. 1.40
Cotton Valley (Holloway sand) .. 1.25
Lisbon distillate 1.20
Republic Oil Refining Co., 5-21-41:
Bayou Pigeon $1.20
Texas Co., 5-21-41:
Erath $1.21
Garden Island 1.36
Lafitte, Paradis 1.19
Lake Mongoulois 1.36

ROCKY MOUNTAIN GRAVITY TABLE

Below 29	$0.96
29-29.9	.98
30-30.9	1.00
31-31.9	1.02
32-32.9	1.04
33-33.9	1.06
34-34.9	1.08
35-35.9	1.10
36-36.9	1.12
37-37.9	1.14
38-38.9	1.16
39-39.9	1.18
40 and above	1.20

Stanolind Oil & Gas Co., 5-20-41, includes Dutton Creek, Midway, and Salt Creek except Tensleep crude, Wyoming.

Sinclair-Wyoming Oil Co., 5-20-41, includes Salt Creek and Lost Soldier, except Tensleep crude, Wyoming.

Continental Oil Co., 5-21-41, includes Fort Collins and Wellington, Colorado.

Wyoming

Ohio Oil Co.:
Rock River (5-20-41) $1.15
Lance Creek (7-1-41) 1.12
Elk Basin and Grass Creek (light) 1.00
Stanolind Oil & Gas Co., 5-20-41:
Frannie (light) ..... .70
Frannie (heavy) ..... .47
Grass Creek (light) 1.00
Grass Creek (heavy) ..... .50
Hamilton dome ..... .45
Elk basin 1.00
Salt Creek (Tensleep) ..... .6785
Continental Oil Co.:
Big Muddy (5-30-41) $1.08
Lance Creek (9-1-41) 1.12

Montana

Continental Oil Co., 4-1-41:
Cat Creek $1.15

Colorado

Stanolind Oil & Gas Co., 5-20-41:
Iles $1.07
Continental Oil Co., 5-21-41:
Canon City-Florence $1.08

TEXAS GULF COAST GRAVITY TABLES

	(1)	(2)	(3)	(4)	(5)
Below 20	$1.06	$1.06		$.98	$.93
20-20.9	1.08	1.08		1.00	.96
Below 21			$1.08		
21-21.9	1.10	1.10	1.10	1.02	.97
22-22.9	1.12	1.12	1.12	1.04	.99
23-23.9	1.14	1.14	1.14	1.06	1.01
24-24.9	1.16	1.16	1.16	1.08	1.03
25-25.9	1.18	1.18	1.18	1.10	1.05
26-26.9	1.20	1.20	1.20	1.12	1.07
27-27.9	1.22	1.22	1.22	1.14	1.09
28-28.9	1.24	1.24	1.24	1.16	1.11
29-29.9	1.26	1.26	1.26	1.18	1.13
30-30.9	1.28	1.28	1.28	1.20	1.15
31-31.9	1.30	1.30	1.30	1.22	1.17
32-32.9	1.32	1.32	1.32	1.24	1.19
33-33.9	1.34	1.34	1.34	1.26	1.21
34-34.9	1.36	1.36	1.36	1.28	1.23
35-35.9	1.38		1.38	1.30	1.25
36-36.9	1.40		1.40	1.32	1.27
37-37.9	1.42		1.42	1.34	1.29
38-38.9	1.44		1.44	1.36	1.31
39-39.9	1.46		1.46	1.38	1.33
40 and above	1.48		1.48	1.40	1.35

TEXAS GULF COAST GRAVITY TABLE EXPLANATION

COLUMN (1):
Humble Oil & Refining Co., 5-21-41, includes Amelia, Clear Lake, Goose Creek, Hastings, Magnet, Mykawa (new), Raccoon Bend, South Thompsons Sugarland, Thompson, and Webster fields.
Stanolind Oil & Gas Co., 5-21-41, includes West Beaumont, High Island, and Spindletop.
Sinclair Prairie Oil Marketing Co., 5-21-41.
Stanolind Oil Purchasing Co., 4-9-42, includes Clinton and Lake Creek.
Pure Oil Co., 4-21-41, includes Louise and Ganado.
Gulf Refining Co., 5-21-41, includes Spindletop, Sour Lake, Lovells Lake,

LOUISIANA AND SOUTHERN ARKANSAS GRAVITY TABLE

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Below 18													$.94					
18-18.9													.96					
19-19.9													.98					
Below 20								$1.06		$.94	$.99	$.89			$1.06			
20-20.9								1.08		.96	1.01	.91	1.00		1.08			
Below 21	$.68			$.90										$.90				
21-21.9	.70			.92				1.10		.98	1.03	.93	1.02	.92	1.10			
22-22.9	.72			.94				1.12		1.00	1.05	.95	1.05	.94	1.12			
23-23.9	.74			.97				1.14		1.02	1.07	.97	1.08	.96	1.14			
24-24.9	.76			.98				1.16		1.04	1.09	.99	1.11	.98	1.16			
Below 25		$.86	$.98			$.88												
25-25.9	.78	.88	1.00	1.00		.90		1.18		1.06	1.11	1.01	1.14	1.00	1.18			
26-26.9	.80	.90	1.02	1.02		.92		1.20		1.08	1.13	1.03	1.17	1.02	1.20			
27-27.9	.82	.92	1.04	1.04		.94		1.22		1.10	1.15	1.05	1.19	1.04	1.22			
28-28.9	.84	.94	1.06	1.06		.96		1.24		1.12	1.17	1.07	1.21	1.06		$1.14	$1.06	
29-29.9	.86	.96	1.08	1.08		.98		1.26		1.14	1.19	1.09	1.23	1.08		1.16	1.08	
30-30.9	.88	.98	1.10	1.10	$1.28	1.00		1.28		1.16	1.21	1.11	1.25	1.10		1.18	1.10	$1.05
31-31.9	.90	1.00	1.12	1.12	1.30	1.02		1.30	$1.07	1.18	1.23	1.13	1.27	1.12		1.20	1.12	1.07
32-32.9	.92	1.02	1.14	1.14	1.32	1.04		1.32	1.09	1.20	1.25	1.15	1.29	1.14		1.22	1.14	1.09
33-33.9	.94	1.04	1.16	1.16	1.34	1.06		1.34	1.11	1.22	1.27	1.17	1.31	1.16		1.24	1.16	1.11
34-34.9	.96	1.06	1.18	1.18	1.36	1.08		1.36	1.13	1.24	1.29	1.19	1.33	1.18		1.26	1.18	1.13
35-35.9	.98	1.08	1.20	1.20	1.38	1.10			1.15					1.20		1.28	1.20	1.15
Below 36							$1.07											
36-36.9	1.00	1.10	1.22	1.22	1.40	1.12	1.09		1.17					1.22		1.30	1.22	1.17
37-37.9	1.02	1.12	1.24	1.24	1.42	1.14	1.11		1.19									1.19
38-38.9	1.04	1.14	1.26	1.26	1.44	1.16	1.13		1.21									1.21
39-39.9	1.06	1.16	1.28	1.28	1.46	1.18	1.15		1.23									1.23
40 & above	1.08	1.18	1.30	1.30	1.48	1.20	1.17		1.25									1.25

LOUISIANA AND SOUTHERN ARKANSAS TABLE EXPLANATION

Standard Oil Co. of Louisiana, 5-22-41.

COLUMN (1) applies to Atlanta, Buckner, Magnolia, Schuler (Jones sand), Village, and Lewisville fields.

COLUMN (2) applies to De Soto, Sabine, Fouke, Homer, Miller County, Sugar Creek, and Nebo.

COLUMN (3) applies to Bunkie, Eola, Olla, and South Olla.

COLUMN (4) applies to Bayou Mallet, Choctaw, Darrow, Jeanerette, Lirette, North Crowley, South Crowley, Port Barre, Potash, Roanoke, St. Martinville, and Port Allen.

COLUMN (5) applies to University (Baton Rouge). Posted 6-2-42.

COLUMN (6) applies to Cotton Valley crude, Rodessa and Shreveport (Cross Lake); also Anse La Butte, effective 8-1-41, starting at 80 cents for below 21°, also, to Caddo effective 10-15-41.
Continental Oil Co., 5-21-41.

COLUMN (7) applies to Abbeville, Louisiana.
Stanolind Oil & Gas Co., 5-21-41.

COLUMN (8) applies to East and West Hackberry.

COLUMN (6) applies to Caddo Parish, effective 10-15-41.

COLUMN (9) applies to Evangeline, Acadia Parish.
Lion Oil Refining Co., 5-22-41.

COLUMN (1) applies to Reynolds lime, Jones sand, Schuler, Ark.

COLUMN (2) applies to El Dorado, West and South Rainbow fields, Snow Hill, and Schuler-Morgan sand.
Placid Oil Co., 5-22-41.

COLUMN (3) applies to Olla.

COLUMN (2) applies to Nebo field.
Shell Oil Co., Inc., 5-20-41.

COLUMN (10) applies to Roanoke, Chalkley.

COLUMN (11) applies to Iowa, Black Bayou, White Castle.

COLUMN (12) applies to Gibson, South Houma, Hester, West Lake Verret.
Magnolia Petroleum Co., 5-21-41.

COLUMN (13) applies to Lockport, Cameron Meadows, and West Gueydan, La.

COLUMN (6) applies to Haynesville, Cotton Valley, Rodessa, La., and Miller County, Arkansas.
Phillips Petroleum Co., 3-29-41.
Arkansas Fuel Oil Co., 2-19-42.

COLUMN (1), Schuler (Jones sand), except schedule starts at 76 cents for below 25° gravity.
Gulf Refining Co., 5-21-41.

COLUMN (9), Jennings.

COLUMN (8), Edgerly, Starks, Vinton East Hackberry, Cameron Meadows, and Leesville.

COLUMN (16) applies to Grand Bay, Quarantine Bay, Timballer Bay, and West Bay, except schedule starts at $1.12 for below 28° gravity.

COLUMN (6) applies to Caddo, Homer, Bull Bayou, Crichton, De Soto, Haynesville, and El Dorado.

COLUMN (4) applied to West Gueydan, effective 5-25-42.
Pure Oil Co., 4-22-41.

COLUMN (14) applies to Gueydan crude.

COLUMN (6), Caddo, Homer, Haynesville, Bull Bayou, Crichton, De Soto, and El Dorado.
Texas Co., 5-21-41.

COLUMN (6) applies to North Louisiana.

COLUMNS (15) and (16), Bay St. Elaine, Caillou Island, Iberia, Lake Barre, Lake Pelto, Leesville, Port Barre. (Schedules A and B).

COLUMN (17), Bateman Lake, Dog Lake, Fausse Point, Horseshoe Bayou Jefferson Island, Plumb Bob, Vermilion Bay, West Cote Blanche, and Delta Duck Club.

COLUMN (18), Delta Farm, Lake Salvador, Golden Meadow.

LOUISIANA AND ARKANSAS FLAT PRICES

Continental Oil Co., 5-21-41:
Tepetae and Lake Arthur $1.18
Ville Platte 1.20
Gulf Refining Co., 5-21-41:
Smackover (Ark.) $0.83
Lion Oil Refining Co., 5-22-41:

"Let's settle for the casing
that "goes-in" faster . . .
Consistently"

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Seamless
EXTREME LINE
CASING

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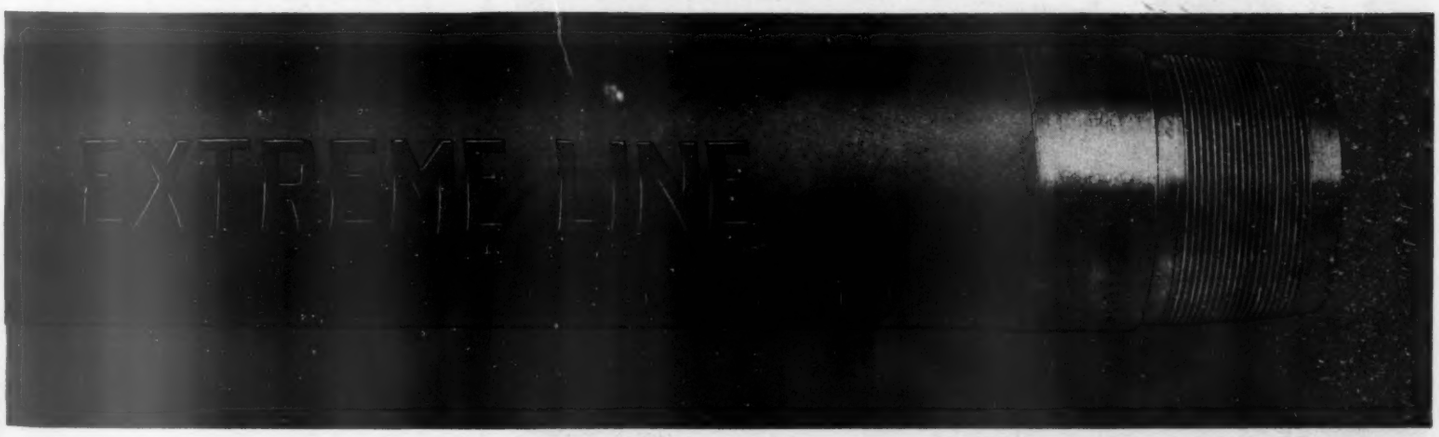

West Beaumont, Goose Creek, South Liberty, Big Creek, Blue Ridge, Fannett, Moore, Barbers Hill, Hankamer, Thompson, Lochridge, Dyersdale, and Hull (old).

Sun Oil Co., 5-21-41, includes Barbers Hill, Batson (old), Bayou Blue, Chacahoula, Cotton Lake, Esperson (below 35° gravity), Fausse Point, Goose Creek, Greens Lake, Hackberry (east and west), Hull (below 25°), Humble (below 35°), Nome, North Dayton (below 25°), Orange, Saratoga, Sour Lake, South Liberty, and Vinton.

COLUMN (2):

Texas Co., 5-21-41, includes Arriola, Ganado, Hamman, Hillje, Humble, Kubela, Magnet, Manvel, Markham, Mauritz, Old Ocean, Pickett Ridge, Port Neches, Sour Lake, West Columbia, and Withers.

COLUMN (3):

Pan American Production Co., 5-21-41, includes Hastings and South Houston.

Stanolind Oil & Gas Co., 4-1-41, includes High Island, Spindletop, Hastings, and South Houston.

COLUMN (4):

Humble Oil & Refining Co., 5-21-41, includes Anahuac, Angleton, Cedar Point, Fishers' Reef, Hull (new and old), Pierce Junction, Red Fish Reef, and Turtle Bay.

Gulf Refining Co., 5-21-41, includes Anahuac, Hull (new), Thompson (deep), Pierce Junction, and Orange.

Sun Oil Co., 5-21-41, includes Anahuac, Caplen and Turtle Bay.

Humble Oil & Refining Co., 3-29-41, includes Dickinson, Gillock, Hardin, League City, and Rowan.

COLUMN (5):

Pan American Production Co., 5-21-41, includes Gillock, except scale starts at 95 cents below 21°.

Stanolind Oil Purchasing Co., 5-21-41, includes Fairbanks, North Houston, and Roslyn.

SOUTH TEXAS AND SOUTHWEST TEXAS GRAVITY TABLES

	1	2	3	4	5	6	7
Below 20	$1.03	$1.08	$1.08	$.89	$1.03	$1.03	$1.08
20-20.9	1.05	1.10	1.10	.90	1.05	1.05	1.10
21-21.9	1.07	1.12	1.12	.91	1.07	1.07	1.12
22-22.9	1.09	1.14	1.14	.92	1.09	1.09	1.14
23-23.9	1.11	1.16	1.16	.93	1.11	1.11	1.16
24-24.9	1.13	1.18	1.18	.94	1.13	1.13	1.18
25-25.9	1.15	1.20	1.20	.95	1.15	1.15	1.20
26-26.9	1.17	1.22	1.22	.96	1.17	1.17	1.22
27-27.9	1.19	1.24	1.24	.97	....	1.19	1.24
28-28.9	1.21	1.26	1.26	.98	....	1.21	1.26
29-29.9	1.23	1.28	....	.99	....	....	1.28
30-30.9	1.25	1.30	....	1.00	....	....	1.30
31-31.9	1.27	1.32	....	1.01	....	....	1.32
32-32.9	1.29	1.34	....	1.02	....	....	1.34
33-33.9	1.31	1.36	....	1.03	....	....	1.36
34-34.9	1.33	1.38	....	1.04	....	....	1.38
35-35.9	1.35	1.40	....	1.05	....	....	1.40
36-36.9	1.37	1.42	....	1.06	....	....	....
37-37.9	1.39	1.44	....	1.07	....	....	....
38-38.9	1.41	1.46	....	1.08	....	....	....
39-39.9	1.43	1.48	....	1.09	....	....	....
40 and above	1.45	1.50	....	1.10	....	....	....

SOUTH AND SOUTHWEST TEXAS TABLE EXPLANATION

COLUMN (1) MIRANDO:

Humble Oil & Refining Co., 5-21-41, includes Blanchard Bridwell, Colorado, Comitas, Eagle Hill, Escobas, Fitzsimmons, Glen, Government Wells (North and South), Heyser, Hoffman, Kelsey, Kohler, Loma Novia, Lundell, Manila, Mirando Valley, Placedo, Randado, Sarnosa, and Tesoro.

Magnolia Petroleum Co., 5-21-41.

Continental Oil Co., 7-1-41. Includes Hoffman, Government Wells (North and South), Lopez, Moco, Colmena, Seven Sisters, South Seven Sisters, Loma Novia, Conoco Driscoll, O'Hern, Piedre Lumbre, and Taranchauas.

American Mineral Spirits Co., 5-21-41, includes Adami and Munson.

Republic Oil Refining Co., 5-21-41, includes Heyser field crude.

COLUMN (2) REFUGIO:

Continental Oil Co., 7-1-41, includes Minnie Bock, Clara Driscoll, South Clara Driscoll, Driscoll Ranch, Orange Grove, and Wade City.

Humble Oil & Refining Co., 5-21-41, includes East White Point, Greta, Melon Creek, O'Connor-McFaddin, Plymouth, Saxet, Taft, and Tom O'Connor.

American Mineral Spirits Co., 5-21-41, includes Plymouth, Taft, and East White Point.

COLUMN (3) REFUGIO:

Texas Co., 5-21-41, includes Greta, Saxet, and Taft.

COLUMN (4) LA ROSA:

American Mineral Spirits Co., 3-29-41.

COLUMN (5) DUVAL-MIRANDO:

Sun Oil Co., 5-21-41.

COLUMN (6) DUVAL-MIRANDO:

Texas Co., 5-21-41.

COLUMN (7) NUECES COUNTY:

American Mineral Spirits Co., 5-21-41.

Republic Oil Refining Co., 5-21-41.

WEST TEXAS, PANHANDLE AND NEW MEXICO TABLE EXPLANATION

COLUMN (1):

Humble Oil & Refining Co., 5-21-41, includes Andrews, Crane, Crockett, Ector, Gaines, Glasscock, Howard, Reagan, Upton, Winkler, and Yoakum counties, West Texas, and Lea County, New Mexico.

Gulf Refining Co., 5-21-41, includes Crane, Ector, Upton, Ward, and Winkler counties, West Texas.

COLUMN (2):

Sinclair Prairie Oil Marketing Co., 5-21-41, includes West Texas and Lea County, New Mexico. Effective 5-29-41 in Eddy County, New Mexico.

Magnolia Petroleum Co., 5-21-41, includes Upton, Howard, Glasscock, Mitchell, Winkler, Cochran, Hockley, Yoakum, and Gaines counties.

COLUMN (3):

Texas Co., 5-21-41, includes Crane and Winkler counties, Texas, and Lea County, New Mexico.

COLUMN (4) TEXAS PANHANDLE:

Magnolia Petroleum Co., 7-9-41.

Continental Oil Co., 7-9-41.

Phillips Petroleum Co., 7-9-41.

COLUMN (5) WINKLER AND LEA:

Stanolind Oil & Gas Co., 5-21-41, includes Winkler County only.

Gulf Refining Co., 5-21-41, includes Lea County, New Mexico, only

COLUMN (6) GRAY COUNTY:

Texas Co., 5-21-41.

H. F. Wilcox Oil & Gas Co., 7-9-41.

COLUMN (7) LEA COUNTY:

Magnolia Petroleum Co., 5-21-41.

COLUMN (8) EDDY COUNTY:

Continental Oil Co., 5-30-41.

COLUMN (9):

Shell Oil Co., Inc., 5-20-41, includes Crane, Ector, Howard, Glasscock, Upton, Winkler, and Yoakum counties, Texas, and Lea County, New Mexico.

COLUMN (10) TEXAS PANHANDLE:

Humble Oil & Refining Co., 7-9-41.

COLUMN (11) PANHANDLE:

Sinclair Prairie Oil Marketing Co., 5-23-41.

WEST TEXAS, PANHANDLE, AND NEW MEXICO GRAVITY TABLES

	1	2	3	4	5	6	7	8	9	10	11
Below 20	$0.70	....	....	....	....	....	....	....	$0.70	$0.73	....
20-20.9	.72	....	....	....	....	....	....	....	.72	.75	....
21-21.9	.74	....	....	....	....	....	....	....	.74	.77	....
22-22.9	.76	....	....	....	....	....	....	....	.76	.79	....
23-23.9	.78	....	$0.78	....	....	....	....	....	.78	.81	....
24-24.9	.80	....	.80	....	....	....	....	....	.80	.83	....
Below 25	....	$0.80	....	....	....	....	$0.80	....	....	....	$0.83
25-25.9	.82	.82	.82	....	$0.82	....	.82	....	.82	.85	.85
26-26.9	.84	.84	.84	....	.84	....	.84	....	.84	.87	.87
27-27.7	.86	.86	.86	....	.86	....	.86	....	.86	.89	.89
28-28.9	.88	.88	.88	$0.91	.88	....	.88	$0.88	.88	.91	.91
29-29.9	.90	.90	.90	.93	.90	....	.90	.90	.90	.93	.93
30-30.9	.92	.92	.92	.95	.92	....	.92	.92	.92	.95	.95
31-31.9	.94	.94	.94	.97	.94	....	.94	.94	.94	.97	.97
32-32.9	.96	.96	.96	.99	.96	....	.96	.96	.96	.99	.99
33-33.9	.98	.98	.98	1.01	.98	....	.98	.98	.98	1.01	1.01
34-34.9	1.00	1.00	1.00	1.03	1.00	$1.03	1.00	1.00	1.00	1.03	1.03
35-35.9	1.02	1.02	1.02	1.05	1.02	1.05	1.02	1.02	1.02	1.05	1.05
36-36.9	1.04	1.04	1.04	1.07	1.04	1.07	1.04	1.04	1.04	1.07	1.07
37-37.9	1.06	1.06	....	1.09	1.06	1.09	....	1.06	....	1.09	1.09
38-38.9	1.08	1.08	....	1.11	1.08	1.11	....	1.08	....	1.11	1.11
39-39.9	1.10	1.10	....	1.13	1.10	1.13	....	1.10	....	1.13	1.13
40 and above	1.12	1.12	....	1.15	1.12	1.15	....	1.12	....	1.15	1.15

NORTH TEXAS, WEST CENTRAL TEXAS, EAST CENTRAL TEXAS GRAVITY TABLES

	1	2	3	4	5	6	7	8
Below 20	....	....	....	....	$.80	....	....	....
20-20.9	....	....	....	....	.82	....	....	....
Below 21	....	....	....	....	....	$.81	....	....
21-21.9	....	....	....	....	.84	.83	....	....
22-22.9	....	....	....	....	.86	.85	....	....
23-23.9	....	....	....	....	.88	.87	....	....
24-24.9	....	....	....	....	.90	.89	....	....
Below 25	....	....	$.88	....	....	....	$.89	$.95
25-25.9	$.91	....	.90	$.97	.02	.91	.91	.97
26-26.9	.93	....	.92	.99	....	.93	.93	.99
27-27.9	.95	....	.94	1.01	....	.95	.95	1.01
28-28.9	.97	.97	.96	1.03	....	.97	.97	1.03
29-29.9	.99	.99	.98	1.05	....	.99	.99	1.05
30-30.9	1.01	1.01	1.00	1.07	....	1.01	1.01	1.07
31-31.9	1.03	1.03	1.02	1.09	....	1.03	1.03	1.09
32-32.9	1.05	1.05	1.04	1.11	....	1.05	1.05	1.11
33-33.9	1.07	1.07	1.06	1.13	....	1.07	1.07	1.13
34-34.9	1.09	1.09	1.08	1.15	....	1.09	1.09	1.15
35-35.9	1.11	1.11	1.10	1.17	....	1.11	1.11	1.17
36-36.9	1.13	1.13	1.12	1.19	....	1.13	1.13	1.19
37-37.9	1.15	1.15	1.14	1.21	....	1.15	1.15	1.21
38-38.9	1.17	1.17	1.16	1.23	....	1.17	1.17	1.23
39-39.9	1.19	1.19	1.18	1.25	....	1.19	1.19	1.25
40 and above	1.21	1.21	1.20	1.27	....	1.21	1.21	1.27

NORTH TEXAS, WEST CENTRAL TEXAS, EAST CENTRAL TEXAS TABLE EXPLANATION

COLUMN (1) WEST CENTRAL AND NORTH:

Humble Oil & Refining Co., 12-11-41, includes Brown, Callahan, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, and Throckmorton counties.

Panhandle Refining Co., 12-11-41, in Leuders area.

Gulf Refining Co., 12-11-41.

Sinclair Prairie Oil Marketing Co., 12-11-41.

COLUMN (2) NORTH TEXAS:

Continental Oil Co., 12-11-41.

Magnolia Petroleum Co., 12-11-41.

Panhandle Refining Co., 12-11-41.

STANDARD OIL CO. OF CALIFORNIA

CRUDE-OIL PRICES EFFECTIVE MAY 23, 1941

(All gravities above those quoted take highest price offered in that field)

Gravity	Signal Hill (Long Beach)	Wilmington	El Segundo	Seal Beach	Huntington Beach	Inglewood	Playa Del Rey	Olinda-Brea Canyon	Athens-Rosecrans	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Greeley, Canal, Wasco	Colea Levee	Mountain View	Elk Hills, Buena Vista Hills, Midway-Sunset, Lakeview area	Lost Hills	Coalinga	Wheeler Ridge	Kettleman Hills	Elwood Terrace
14-14.9	....	$.68	....	....	$.71	....	....	$.70	....	$.70	$.70	$.70	$.72	....	....	....	....	....	$.73	$.73	$.73	....	....	....
15-15.9	....	.71	....	....	.75	$.76	....	.72	....	.72	.71	.72	.72	....	....	....	....	....	.73	.73	.73	....	....	....
16-16.9	....	.74	$.79	....	.79	.79	....	.75	....	.74	.73	.75	.72	....	....	....	....	....	.73	.73	.73	....	....	....
17-17.9	....	.78	.82	....	.82	.82	....	.78	....	.77	.76	.78	.72	....	....	....	....	....	.75	.78	.73	....	....	....
18-18.9	$.80	.82	.86	....	.86	.85	....	.81	....	.80	.79	.82	.74	....	....	....	....	....	.78	.81	.73	....	....	....
19-19.9	.84	.86	.90	....	.89	.88	....	.85	....	.83	.82	.85	.77	....	....	....	....	$.73	.81	.84	.75	....	....	....
20-20.9	.88	.90	.94	....	.93	.92	$.80	.88	....	.86	.85	.89	.80	....	....	....	....	.76	.35	.87	.77	....	....	....
21-21.9	.92	.94	.98	....	.96	.95	.84	.91	....	.89	.89	.92	.84	....	....	....	....	.79	.90	.90	.80	....	....	....
22-22.9	.96	.98	1.02	$.88	.99	.98	.87	.95	....	.93	.93	.96	.87	....	....	....	....	.83	.94	.93	.83	$.76	....	....
23-23.9	1.00	1.02	1.05	.92	1.02	1.01	....	.98	....	.97	.98	1.00	.91	....	....	....	....	.87	.99	.96	.86	.80	....	....
24-24.9	1.03	1.06	1.07	.97	1.05	1.04	f.o.b.	1.01	....	1.01	1.02	1.03	.94	$.99	....	....	....	.90	1.03	.99	.89	.83	....	....
25-25.9	1.07	1.09	1.10	1.01	1.08	1.07	our	1.04	....	1.05	1.06	1.07	.98	1.02	....	....	....	.94	1.07	1.01	.92	....	....	....
26-26.9	1.11	1.12	1.12	1.06	1.11	1.10	pipe	1.08	....	1.09	1.10	1.11	1.01	1.06	....	....	....	.97	1.11	1.04	.95	....	....	....
27-27.9	1.15	1.15	1.15	1.10	1.14	1.14	line	1.11	....	1.13	....	1.15	1.05	1.10	$1.04	....	....	1.01	1.15	1.07	.98	....	....	....
28-28.9	1.18	1.18	1.18	1.15	1.17	1.17	....	1.14	....	1.17	....	....	1.08	1.13	1.08	....	....	1.04	1.19	1.10	1.00	....	....	....
29-29.9	1.20	1.21	....	1.19	1.20	1.20	....	....	$1.17	....	....	....	1.12	1.17	1.12	....	....	1.07	1.24	1.13	1.02	....	....	....
30-30.9	1.23	1.24	....	....	1.23	1.22	....	....	1.21	....	....	....	1.15	1.21	1.15	$1.01	$1.09	1.10	1.28	1.16	1.04	....	....	f.o.b.
31-31.9	....	....	....	....	....	1.24	....	....	1.25	....	....	....	1.19	1.24	1.19	1.04	1.12	1.14	....	....	1.06	....	....	ship
32-32.9	....	....	....	....	....	....	....	....	1.29	....	....	....	1.23	1.28	1.23	1.07	1.14	1.17	....	....	1.09	....	....	....
33-33.9	....	....	....	....	....	....	....	....	1.32	....	....	....	1.27	....	1.26	1.10	1.17	....	....	....	1.11	....	....	$1.22
34-34.9	....	....	....	....	....	....	....	....	1.36	....	....	....	1.31	....	1.30	1.13	1.20	....	....	....	1.13	....	....	1.25
35-35.9	....	....	....	....	....	....	....	....	....	....	....	....	1.35	....	....	1.16	1.22	....	....	....	....	....	$1.23	1.28
36-36.9	....	....	....	....	....	....	....	....	....	....	....	....	1.39	....	....	1.19	1.25	....	....	....	....	....	1.26	....
37-37.9	....	....	....	....	....	....	....	....	....	....	....	....	1.43	....	....	1.22	....	....	....	....	....	....	1.29	....
38-38.9	....	....	....	....	....	....	....	....	....	....	....	....	1.47	....	....	1.25	....	....	....	....	....	....	....	....
39-39.9	....	....	....	....	....	....	....	....	....	....	....	....	1.51	....	....	....	....	....	....	....	....	....	....	....
40-40.9	....	....	....	....	....	....	....	....	....	....	....	....	1.53	....	....	....	....	....	....	....	....	....	....	....

Standard posts 73 cents for all grades at Newhall, Kern River, Kern Front, McKittrick and Round Mountain.

Bell Oil & Gas Co., 12-11-41.
Texas Co., 12-11-41.

COLUMN (3) EAST CENTRAL:
Magnolia Petroleum Co., 5-21-41, includes Cass, Panola, and Rodessa (Texas and Louisiana), and Miller County, Arkansas.
Gulf Refining Co., 5-21-41, includes Rodessa, Texas.

COLUMN (4) EAST CENTRAL:
Humble Oil & Refining Co., 5-21-41, includes Anderson, Cherokee, Limestone, and Navarro counties and the Navarro Crossing field.

COLUMN (5) EAST CENTRAL:
Humble Oil & Refining Co., 5-21-41, includes Hawkins field.

COLUMN (6) NORTH TEXAS:
Stanolind Oil Purchasing Co., 12-11-41.

COLUMN (7) FISHER COUNTY:
Shell Oil Co., Inc., 12-11-41.

COLUMN (8) MEXIA:
Sinclair Prairie Oil Marketing Co., 5-30-41.

TEXAS FLAT-PRICE FIELDS

Agua Dulce (light), Benavides, Longhorn, Southland, and Sweden, 5-21-41 ..... $1.35

Agua Dulce (heavy), 10-16-41 ..... $1.25
Republic Oil Refining Co., 5-21-41.

Alfred and Magnolia City $1.35
Continental Oil Co., 5-21-41.

Alice, Benavides (North Sweden), Ben Bolt, Clark-Mull, Sun, and Tom Graham $1.35
Humble Oil & Refining Co., 5-21-41.

Batson (new), Humble (35° and above), Fig Ridge, Hardin, Hull (25° and above), La Belle, North Dayton (25° and above), Seabreeze South China, West Orange, Willow Slough and Oyster Bayou ... $1.25
Sun Oil Co., 5-21-41.

Cass County $1.20
Texas Co., 5-21-41.

Cayuga, Anderson County $0.90
Pan American Production Co., 5-21-41.

Chapel Hill, Smith County:
Crude distillate $1.30
Crude oil 1.18
Chapel Hill Gas System, 11-7-41.

Clay Creek, Washington County .. $1.00
Sun Oil Co., 5-21-41.

Cleveland, Liberty County $1.26
Magnolia Petroleum Co., 5-21-41.

Conroe, Montgomery County $1.43
Humble Oil & Refining Co., 5-21-41.
Tide Water Associated Oil Co., 5-21-41.
Sun Oil Co., 5-21-41.
Texas Co., 5-21-41.

Cotton Lake (South) $1.35
Sun Oil Co., 5-21-41:

East Texas and Flag Lake* $1.25
**Humble Oil & Refining Co.*, 5-21-41.
Pan American Production Co., 5-21-41.
Tide Water Associated Oil Co., 5-21-41.
Gulf Refining Co., 5-21-41.
Magnolia Petroleum Co., 5-21-41.
Sinclair Prairie Oil Marketing, 5-21-41.
Shell Oil Co., Inc., 5-20-41.
Sun Oil Co., 5-21-41.
Texas Co., 5-21-41.
Stanolind Oil Purchasing Co.

Esperson (35° and above), South Esperson $1.30
Sun Oil Co., 5-21-41.

Flour Bluff, East Flour Bluff $1.33
Humble Oil & Refining Co., 5-21-41.

Hockley and Cochran $0.87
Texas Co., 5-21-41.

Livingston and Mercy $1.25
Shell Oil Co., Inc., 5-20-41.

Long Lake $1.23
Sinclair Prairie Oil Marketing, 5-21-41.

Luby $1.35
American Mineral Spirits Co., 5-21-41.

Luling $1.05
Magnolia Petroleum Co., 5-21-41.

Lytton Springs $1.17
Magnolia Petroleum Co., 5-21-41.

Salt Flat, North Salt Flat, Darst Creek*, Hilbig, Clark, Carroll, and Zoborski $1.14
Humble Oil & Refining Co., 5-21-41.
Magnolia Petroleum Co., 5-21-41.
**Texas Co.*, 5-21-41.

Rincon (North), Sun, North Sun and Garcia $1.35
Sun Oil Co., 5-21-41.

Yturria $1.45
Sun Oil Co., 3-19-42.

Talco $0.79
Humble Oil & Refining Co., 5-21-41.
Magnolia Petroleum Co., 5-21-41.

Tomball and Satsuma $1.40
Humble Oil & Refining Co., 5-21-41.
**Magnolia Petroleum Co.*, 5-21-41.
Stanolind Oil Purchasing Co., 4-1-41.

Van, Van Zandt County $1.08
Humble Oil & Refining Co., 5-21-41.
Pure Oil Co., 5-21-41.

Yates (regular) $0.95
Humble Oil & Refining Co., 5-21-41.
Gulf Refining Co., 5-21-41.
Shell Oil Co., Inc., 5-20-41.

Yates (shallow) $0.82
Shell Oil Co., Inc., 5-20-41.

Directory of Government Oil Agencies

(Continued from Page 73)

AUTOMOTIVE SUPPLY RATIONING DIVISION
Temporary Building D, Phone REpublic 7500

	Rm.	Ph.
Phillips, Charles F., director	2442	6041
Betten, Robert S., tire rationing	2403	6648

RUBBER PRODUCTS DIVISION

Bryan, R. F., associate price executive	2440	4559

WAR PRODUCTION BOARD

LIAISON REPRESENTATIVE FOR OIL
Social Security Building, Phone REpublic 7500

McClintock, R. Otis, chief	5193-A	71181
Robbins, E. E., special assistant	5193-A	71181

PETROLEUM MACHINERY SECTION
Temporary Building E, Phone REpublic 7500

Collins, A. E., chief		7541
Choates, John W., refinery		72615
Clark, W. C., production		72615
Miller, E. R., production		5751

CHEMICALS BRANCH
Railroad Retirement Building, Fourth and C Streets, S.W. Phone REpublic 7500

Reid, E. W., branch chief	3090	2262
Morgan, D. P., deputy chief	3607	2286
Weidlein, E. R., senior consultant	3090	2262
Priorities and Allocations Section		
Clements, H. M., foreign unit	2618	3780
Watson, D. L., maintenance	2628	3667
Projects and Facilities Section		
Wilcoxon, B., projects unit	2633	5627
Mudge, A., plant facilities	2623	3976
Industrial-Oils Section		
Daniels, T. L., section chief	2432	4071
Synthetic-Rubber Section		
Carman, F. H., section chief	2613	3488
Kenney, R. P., rubberlike plastics	2605	71576
Roberts, G. L., processes	2615	71709
Ross, B., chlorinated unit	2607	71576
Aromatics Section		
Raynolds, J., section chief	2408	71064

OFFICE OF RUBBER COORDINATOR
Social Security Building, Phone REpublic 7500

Newhall, Arthur B., coordinator	3700	4698
Brett, Alden C., deputy	3700	2020
Pittman, E. W., consultant	3700	2098
Young, Thomas H., consultant	3700	71653

RUBBER RESERVE CORP.

811 Vermont Ave., N.W., Phone EXecutive 3111

Klossner, H. J., president	3
Young, R. D., vice president	787
Crossland, S. T., vice president	5
Mulligan, H. A., vice president	142
Beck, W. C., Jr., treasurer	159
Hamilton, C. E., Jr., counsel	181

OFFICE OF DEFENSE TRANSPORTATION

Interstate Commerce Commission Building, Constitution Avenue and Twelfth Street, N.W.; Phone REpublic 7500

Eastman, Joseph B., director	5136	3527
Dow, F. B., oil carriers	5132	73207
Bourque, A. V., consultant	5132	73207

MOTOR-TRANSPORT DIVISION

Rogers, John L., director	4211	2297
Niness, S. F., oil carriers	4221	6351

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Such a gauge was needed in the oil industry; so all the knowledge we have acquired in 75 years of instrument building was brought to bear on meeting this need. The result was a gauge that filled this big order as it was never filled before—the Marsh "Mastergauge".

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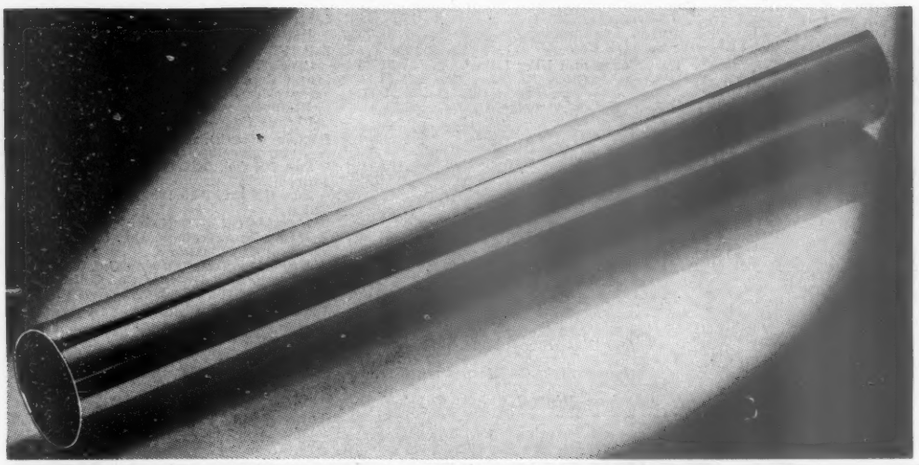
GAUGES



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TOLEDO, OHIO

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Federal Relationship With Oil Industry Solidified by War

(Continued from Page 79)

coordinate and rearrange barge, truck, pipe-line and rail movements from the Midwest to the East in order to increase efficiency of existing facilities.

Early in April, OPC directed the industry to pool its pipe-line facilities and to interconnect its lines and re-lay old lines to form extensions and new systems to move as much oil as possible to the East Coast or to points where it could be shipped eastward advantageously by barge or rail. Detailed delegation of authority to the industry to relocate pipe lines and pool shipments was given by OPC in Directives 49 and 50 issued early in May.

Meanwhile, the Office of Defense Transportation assumed a more important role in oil shipment. and an order effective June 1 took complete control of all tank cars and cut red tape previously surrounding their interchange and pooling. ODT also issued a series of regulations on the use of trucks designed to cut mileage by 25 to 40 per cent by reducing empty haul, consolidating deliveries. Most of these were modified or postponed as regards essential trucking operations of the oil industry.

In May Congress became interested in possibilities of moving more oil eastward by barges on the inland and coastal waterways, and several committees conducted investigations. As a result of these and of parallel administrative actions, the use of wooden barges was authorized for shipping certain petroleum products in certain waterways, and the House passed the Mansfield bill authorizing improvement of the Gulf and Atlantic intracoastal canals, construction of a barge canal and an oil pipe line across northern Florida, and a pipe line from Mississippi to Georgia or Carolina tidewater.

On June 10, WPB authorized construction of 550 miles of 24-in. line from East Texas feeding barge and rail terminals and connecting with other pipe lines in southern Illinois.

Marketing

The marketing end of the industry was harassed by declining consumption, maldistribution of supplies, curtailment orders, rationing, and price ceilings.

With rubber supplies cut off by enemy action the Government stopped production and sale of passenger cars and tires and rationed stocks to essential users, warning other motorists that they might get no new tires for two or three years. This lead to voluntary reductions in motoring. estimated by some at 25 per cent below the level of the previous year, with a consequent slump in gasoline sales. In the East and the Pacific Northwest transportation difficulties forced limitation orders curtailing deliveries of both gasoline and fuel oil and promoted campaigns to induce conversion to competitive fuels.

Rationing of gasoline to save tires was the subject of administration discussion as early as March, with OPA favoring and OPC opposing national application. On March 19, WPB issued Limitation Order L-70, cutting by 20 per cent deliveries of gasoline to dealers in 17 eastern states and Washington and Oregon. On April 6, Order L-56 reduced fuel-oil deliveries 25 per cent in the same areas. In April, the gasoline curtailment was made 33⅓ per cent, and plans were made to cut even deeper. Both L-70 and L-56 were amended May 16 to curtail deliveries of gasoline and fuel oil 50 per cent of calculated normal. Restrictions on deliveries to dealers in the East Coast were removed when the coupon rationing system became effective July 22.

Legislation

Congressional activity affecting the oil industry during the first half of the year was chiefly in the nature of investigations rather than legislatives.

An important investigation was that of the Senate committee on national defense, headed by Sen. Harry S. Truman of Missouri. Among other subjects it issued lengthy reports on both the crude rubber stock-pile situation and the patent-pooling agreement between the Standard Oil Co. of New Jersey and the German I.G. chemical trust, the latter having been the subject of an antitrust consent decree.

A subcommittee of the Senate committee on agriculture, headed by Sen. Guy M. Gillette of Iowa, held extensive hearings on proposals to make synthetic rubber from grain alcohol and reported a bill for this purpose.

Various proposals for subsidizing industries having difficulty operating under price ceilings were discussed in Congress, and preliminary hearings were held on a bill, the Connally-Steagall measure, to create the War Petroleum Corp. to buy, sell and transport oil.

Only direct oil legislation enacted during the first half of the year was a bill to make the Connally "Hot Oil" Act permanent. A general measure was passed permitting the WPB to grant immunity under the antitrust laws for industry actions performed in conformance with orders of a government agency found by WPB to be necessary to the war program and certified to the Department of Justice.

Gas

Creation in OPC of Natural Gas and Natural Gasoline Division gave recognition to the importance of these branches in furnishing materials for war. But OPC did not encompass all government activities relating to natural gas. The WPB Power Division undertook regulation of natural-gas deliveries in critical war areas, and Limitation Order L-31, issued tentatively in February, prohibited deliveries to new customers in certain areas except with WPB permission. The regulatory power of the Federal Power Commission regarding rates charged by interstate natural-gas pipe lines was greatly strengthened by a series of important decisions of the Supreme Court. The commission forced significant reductions in the Middle West and southwestern states.

●

BOOK REVIEW

A completely revised edition of the Condensed Chemical Dictionary (Third Edition) has been issued containing more than 6,000 new items. The reference handbook is edited by Thomas C. Gregory. It contains 756 pages, listing, in dictionary form, complete descriptions of more than 18,000 chemicals. Included in the information presented is the trade, brand and proprietary names.

Chemicals are listed alphabetically with their synonyms and formulas; colors, properties, constants, specific gravities, melting points, boiling points, solubility in water, alcohol, ether and other solvents; preparation and materials from which made; grades, uses and kinds of customary containers; fire hazards and railroad shipping regulations. The volume is crossreferenced for chemical, trade and popular names.

Condensed Chemical Dictionary (Third Edition) may be purchased through the Book Department of The Oil and Gas Journal at the established retail price of $12.00, postage prepaid (extra outside the United States), and a copy will be forwarded promptly upon receipt of check or money order for the sum. Where payment is not provided, the book will be sent c.o.d. to avoid delay.

AN ARMY MARCHES ON ITS OIL..

OIL, as vital to the course of modern warfare as food for the soldiers, is one of the elements necessary for our final Victory.

Without OIL—not one powerful, hard hitting tank would roll into battle—not a plane would rise to sweep the enemy from the sky—no battleship, carrier or destroyer could search out and sink the hated U-boats.

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CONTINENTAL NATIONAL BANK
OF FORT WORTH

War Conditions Change Trend Of Production Practice

By HARRY F. SIMONS

Oil-production methods and practices are in a constant state of evolution but during wartime the rate of change is greatly accelerated along with the more general affairs. During the last half year, the producing branch has had placed before it the most serious problem it has ever faced—the production of more oil with less material. This article discusses briefly the effect of recent regulations and world events on the business of producing oil.

AFTER operating over 7 months under all-out war conditions the course to be followed in the near future by the production and drilling branches of the petroleum industry is becoming clearer. Also, the importance of the routine work of the driller and the roustabout places a grave responsibility on these men as well as the operating heads of the various companies. As the war progresses and oil becomes more and more a vital material the pressure on all the men engaged in the production of petroleum will be increased.

Acceptance of new conditions and regulations under which drilling and production work must be carried out has been hearteningly steady rather than a mad rush with a dwindling of interest later. The main concern of the operating personnel is to keep on providing the oil necessary to winning the war. What comes after the war is another question.

Most operating men realize that the production of oil is a constantly changing business and that the "good old days" are gone forever. Many feel that they weren't so good in the first place. In other words, most engineers, superintendents, and field workmen feel that out of the travail of war will come much progress in production practices.

The outstanding accomplishments, many expect, will be a better spacing program for all fields and better reservoir control. This is based on the necessity, which will be impressed on all concerned more and more, that for a considerable period the United Nations will be mainly dependent on their supply of oil from wells already on production. Not only that, but this production must be obtained for the most part with the equipment already on hand.

OPC'S Principal Effort

So far, the principal effort of OPC has been directed along two lines: (1) The encouragement of wildcatting to build up a reserve of available petroleum, and (2) the encouragement of secondary-recovery methods. Forty-acre spacing has been thrown into the picture as a deterrent to field drilling rather than as a reservoir conservation policy. The ultimate effect may be something entirely different.

There is no indication that 40-acre spacing will become the rule for all pools. However, wide-scale operation under such a rule for a number of years will give a reasonable answer to the old argument as to whether wider spacing is applicable in certain areas and to just what effect it will have on the ultimate yield. It is pointed out by many engineers that the first oil wells in the country were drilled on 1-acre spacing and this increased gradually through 2-acre, 5-acre, 10-acre, and 20-acre spacing and was approaching 40 acres immediately preceding the war for the larger pools. With a number of pools developed under such a program in the next few years, further data on the spacing subject will be available.

If proven satisfactory, the wider spacing will be a boon to the oil business as it will require one-fourth the investment and one-half the operating expense for any particular pool in comparison to the present generally accepted 10-acre spacing. This means that the cost of crude-oil production will be brought downward. It does not mean that the price of oil and its products will come down as it will be extremely difficult to continue producing oil over the next few years at the present price; the expense of getting the oil aboveground must be reduced if the public (including the armed forces) is to be served and oil producers are to remain solvent.

Another thing 40-acre spacing does not foreshadow is a decrease in the total number of wells drilled annually during a normal year. It means that fewer wells will be required to develop a particular pool with more money and more wells going toward finding new pools to be exploited. The decline on the 40-acre spacing will be considerably less, tending to build a greater reserve and a better stabilized industry. The available reserve is an important factor as a number of wells drilled on 40-acre spacing can produce more than two times as much as the same number of wells on 10-acre tracts. By doubling the wildcat effort, the reserves of the country will be increased although not proportionately.

The wider spacing will place a greater burden on the control of reservoirs and of itself will not cure any waste. A field on 40-acre spacing can be ruined as easily by poor production practices as a field on 10, 5, or 1-acre spacing.

The production rate for any field having a water drive is dependent on the rate of water encroachment which in turn is dependent on the bottom-hole pressure. So long as the wells can produce and stay above the saturation pressure of the oil, no damage is being done to the reservoir.

Producing More With Less

By suitable studies, the rate at which water will move through the sand can be determined and the development of the field planned. As long as the bottom-hole pressure is maintained, the rate of production is not too high. When the addition of more wells and the withdrawal of oil from them causes a pressure decline, it is apparent that sufficient wells are on production and further drilling is unwarranted.

The above is the principal method open to the men in the industry for producing more with less and it is the principal hope of a continued supply of oil with a diminishing source of material with which to equip wells. In some cases, wells in fields already producing can be abandoned, without loss and the equipment used elsewhere.

The injection of gas can be used to step up production in a controlled reservoir as the return of it to the cap will maintain the bottom-hole pressure. Many in the industry look upon pressure-maintenance programs as a "slow" method of producing oil. Actually, it is a stimulating method in which the injected gas is used to bloster the natural reservoir energy. What is accomplished in a pressure-maintenance program in 15 years might take 40 years under natural production.

Secondary recovery accomplishes the same thing and it has been used in the past to speed up the production in a particular field by applying either gas or water pressure to the sand. As soon as the effort to drive the oil begins to take effect, the production of the lease begins to mount, sometimes almost phenomenally. In one way, this method is the most logical and certain way to increase the available supply of oil as a good estimate of the oil present and of the equipment necessary to recover it can be made. The increase in the number of secondary-recovery projects has been held back to a great extent during recent months by a shortage of material. The projects getting under way are those for which material was ordered some months ago or are those requiring little new equipment.

Maintenance of Equipment

Another accomplishment in the producing branch has been the general "tightening of the belt" and a greater premium placed on the maintenance of equipment. Machinery is given better care than ever before and waste of all types is being reduced to a minimum. As the situation tightens, it may be necessary to remove some equipment and place it in more essential service. Superintendents, engineers, and workers are studying closely their operating needs so that they will be able to remove a part here and another one there to keep the properties on production. All realize that this will be uneconomic but that it will be necessary to meet emergencies.

Already under way in practically every field is a close examination of present practices to see how they can be improved or their expense reduced. Engineers, busy for the past several years with routine development work, are concentrating on economic phases of operations. Probably more field experimentation and testing will take place during the next few years than during any other similar period in the history of the industry. All of it will be necessary for the main objective is the saving of equipment through prolongation of the life of the items now in use.

The above is a general field picture. But what of advances in equipment? Development of new tools has been halted to a great extent and few manufacturing concerns can spare the men or material for experimentation on new ideas. However, the industry is fortunate in that during the past several years much money and time were spent on research and a number of items devel-

oped. These will be proven in field use during the next few years. When the normal flow of material is resumed, the drilling and production business will not have lagged behind in modern equipment. Any idea or any new equipment developed which will serve essential material will receive a hearty welcome.

Outstanding Changes

Some of the outstanding things brought to the fore during the past 6 months include such equipment and ideas as:

1. Calipers which can be run in a bore hole to determine its diameter from top to bottom.
2. The storing of butane in depleted horizons.
3. The use of an electrolytic chlorinator to remove sulfate-reducing bacteria from salt water which is to be disposed in a subsurface formation.
4. The application of gravel packing as a means of eliminating troubles and increasing production in fields which are almost depleted.
5. Accurate instruments for measuring the weight and viscosity of drilling fluid and more complete instrumentation generally of drilling rigs.
6. More efficient equipment for the desulfurization of gas in sour-gas fields.
7. A new method of multizone completion which calls for running a succession of liners beginning at the bottom of the hole.
8. A triplex mud pump which increases the fluid volume moving through the drill pipe and well bore approximately 50 per cent.
9. An evaporator which permits a steam rig mounted on a barge to use sea water for the boiler feed.
10. An automatic spider and slip arrangement for handling rotary drill pipe.
11. Studies on pump operation to increase the efficiency and reduce the number of breaks in sucker rods.
12. A better understanding of the causes of drill-pipe and tool-joint failure.
13. Wider use of double-box and double-pin subs for connecting joints of drill pipe.
14. More efficient use of all types of logging, including electrical, mud analysis, and time.
15. Redesign of reverse circulating rotary rigs which allows them to be used for cleanout and completion work.
16. A new type slim-hole rig, wheel mounted and propelled while moving by the drilling engines.
17. Greater centralization of lease equipment.
18. Electrical and steam heating of tubing to remove paraffin or prevent its deposition.
19. Further experimentation with fiber pipe in a shallow well using this type of tubular equipment for casing and a greater application being made of this material for salt-water gathering lines.
20. Use of carbon monoxide as a tracer in repressure projects.
21. Use of reabsorber gases from gasoline plants for field fuel.
22. Automatic tank batteries which do not require the constant attention of a pumper or switcher.
23. Use of citrous fruit pulp as a viscosity-reducing agent in drilling mud.
24. A wider use of torque convertors for increasing the life of internal-combustion engines.

This is not a complete list but is simply a review of the outstanding developments. Others are being developed and still others will come out of the war. The application of light structural metals and of plastics to oil operations will be increased greatly as the facilities for manufacturing these items are expanded.

In short, while the war has hobbled oil-field exploration to a certain extent, it has not slowed down the advancement in production technique and the development of equipment.

•

Refinery Practices Show Rapid Changes During First Half

By W. T. ZIEGENHAIN

The change from a nation at peace to one at war brought with it a necessity for the revamping of refinery branch of the industry. The trend was rather well established during the first 6 months of 1942. Expansion of the 100-octane production of the nation has progressed satisfactorily due to early standardization of design. Flexibility through the use of different catalysts allows greater selectivity of products and will add to the supply of material needed for the aviation-gasoline and rubber programs.

A NEW chapter in refining development began on December 7 last year. The full effect cannot now be foreseen, but operations for the first half of this year offer a good indication of trends. Refineries in this country were built solely upon economic factors and their equipment was chosen to produce the products needed by a nation at peace. The people developed large industries and came to utilize the family car as a general means of supplying pleasure and relaxation. To fill their needs, on this basis, the 450 operating refineries in the United States, scattered among 30 states, specialized in the manufacture of ordinary motor fuel and looked upon burning oils, heavy fuels, waxes and asphalt somewhat as byproducts of gasoline manufacture. Now, however, these refineries find their motor-fuel market slipping away, and they hear the request of federal agencies that they make less gasoline and more residual fuel. Every effort is being made by the Office of Petroleum Coordinator to have refineries engage in some kind of war work in order to develop new supplies of critical hydrocarbon war materials. But they are also committed to produce these with the expenditure of the least possible new metal.

War Production Program

First on the list of war products requested was 100-octane aviation gasoline. Every one in the refining industry is familiar with the mounting estimates of the federal agencies regarding the country's future needs. These estimates started at 40,000 bbl. daily. Then the figure was raised to 60,000 bbl., then 100,000 bbl., 120,000 bbl., and finally to 250,000 bbl. per day. The refining industry has demonstrated its ability and determination to produce the material in the quantities needed, with a safe margin.

The installation of 100-octane-gasoline units is now reported ahead of the anticipated needs. Early standardization of design and size helped materially in the construction program.

In the adoption of catalytic cracking, the use of a design that permits revivifying the catalyst continuously has proved to be an important advancement. Flexibility in the operation to enable the refiner to use any one of several catalysts and thereby produce more or less of one particular hydrocarbon has also proved to be a most favorable development. This latter practice was developed to such an extent in one refinery location that sufficient quantities of butene are planned to be made and recovered directly from the catalytic cracking operation that it will be unnecessary to install an intermediate dehydrogenation unit. The operating cycle and the choice of the catalyst will enable the unit to produce butadiene directly from butane instead of using the intermediate butene step.

Catalytic cracking generally will produce products more nearly the theoretical single hydrocarbon that will do the job best. Scientists and engineers declare they could greatly improve the internal-combustion engine, for instance, if they could design the machine to utilize but one hydrocarbon instead of a mixture such as exists in gasoline. Naturally, they would design the engine to use the one that would produce the greatest amount of useful power when burned in the engine. Its availability would be an economic factor which they would ignore for the moment.

But, obviously, the availability of the fuel could not be ignored by the motor manufacturer if he is to sell cars or airplanes. So, in working toward the objective of producing the best possible motor fuel and in large quantities, the refining industry is adopting catalytic cracking as a means of producing a series of hydrocarbons of consistently higher antiknock value. The choice of the catalyst and the operating temperature, pressures and contact time involved in aech case are determined by what the refinery wants to produce but generally these are substantially less severe than the operating conditions when producing similar products by thermal cracking alone. Also, the use of catalysts is not restricted to cracking but is employed in dehydrogenation, hydrogenation, polymerization and alkylation, to effect changes in the hydrocarbon structure of

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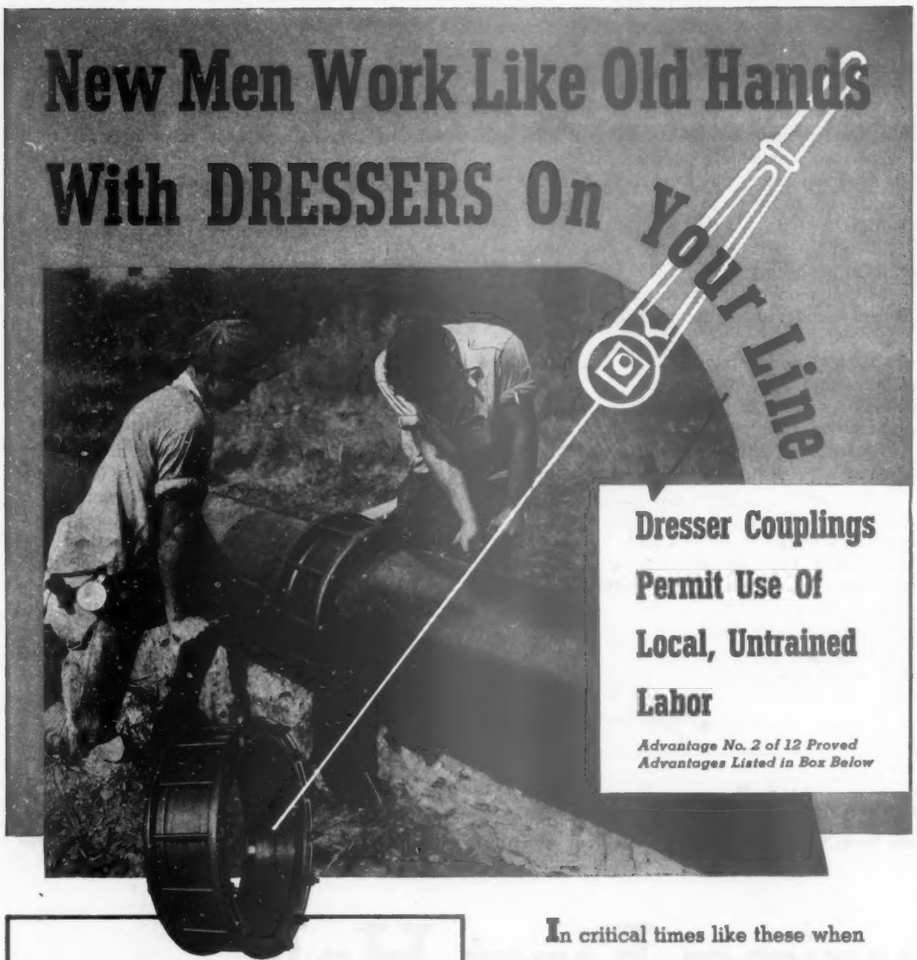

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almost any petroleum fraction. A typical application of catalytic hydrogenation is in the preparation of saturated cracked gas oils which after being processed have unusually favorable acceptance as diesel fuels.

While these two developments have greatly aided our aviation-gasoline and rubber-substitute production programs, their application is restricted to the operation of relatively large refiners and there has been equally impressive accomplishments in altering the equipment in certain small refineries.

For example, the use of a different catalyst in the conventional catalytic polymerization unit will permit the union of benzene with propylene to produce cumene or isopropyl benzene. This is an aviation-gasoline additive that has a naturally high-octane value and smooths out the burning of the gasoline under a rich-mixture or supercharged motor condition.

Backward Steps

The improvement in conditions for the manufacture of aviation gasoline and rubber through the modification of catalysts in existing or standard plants are rightfully considered forward steps. but under the restricted use of new metal in operating refineries, many practices are being resorted to which could be considered retrogression in the art.

This aboutface in normal refinery practices is not all brought about by a scarcity of metals. either. For example, early in the 6-month period under consideration here the refining industry was asked by federal representatives to curtail the production of ordinary motor fuel and increase in proportion, the output of residual fuel. The suggested practice was intended to build up a greater supply of fuel oil for use in the war industries within the East Coast industrial area. The response was productive of relief immediately. The blending back of gas oil with the heavy fuel was further suggested, a practice which is the reverse of the normal procedure for many years.

Then, later in the 6-month period, refiners were told they would not be supplied with the normal quantity of tetraethyl lead to blend with their gasoline because of a shortage of lead. A decline in the average octane value of house-brand gasoline was later reported. This recession, if substantiated by the next periodic survey of gasoline. will be the first downward movement in average gasoline octane values for at least a quarter century.

Use What You Have

The backward trends cited above and designed to save metal are reflected in the revised nature of the product, but there are many other places in the average refinery where equipment changes are being made for lack of new replacement parts and which effect is not recognized in the quality of the finished product but in the cost of manufacture. Reference here is made to the many replacements that are being made of worn or corroded pieces with metal salvaged from other parts of the plant and worked over by the welder and machinist. Thousands of tons of steel plate have been cut down in the form of old tanks and pressure vessels and rerolled to make smaller tanks located at other points. Entire tank farms have been salvaged and handled in this manner.

In other instances, the need of certain equipment has been found sufficiently pressing at one location in the refinery to justify its removal from one service to operate in some other portion of the plant. One refiner explained that he had need for a small exchanger on a still which he had recently installed to strip kerosene distillate. He took a suitable exchanger away from a gasoline stabilizing unit and installed it on the kerosene stripper. The exchanger greatly improved his kerosene recovery and altered only

slightly the required quantity of heat consumed by the stabilizer. He considered the switch worth while but admitted he would not have made the move if he could have received the usual delivery on a new exchanger. He said he would get a new one when gasoline was again worth more than steel.

Lubricants

The same problem of supplying satisfactory aviation motor fuel is also present in supplying a rapidly increasing demand for aviation lubricants. Fortunately the industry has considerable capacity for producing motor oils of exceptionally low pour point and high viscosity index, but even this capacity might not be too much to match the demand for aviation lubricants after our aviation program gets under full sway. Consequently, the first 6 months of 1942 were devoted in part to crecking capacities and expanding the productive capacities where needed. The use of solvents for the preparation of high viscosity index oils has become almost standardized and the use of additives in motor oils to reduce sludge formation, lower the pour test and improve viscosity index has been greatly expanded.

Natural Gasoline

The market for natural gasoline, coming normally from refiners, is now so small that natural-gasoline manufacturers are developing other outlets. The separation and segregation of isobutane from natural gasoline has become a practice in many plants and more of the manufacturing facilities are now engaged in making closely fractionated cuts such as propane, normal butane, isobutane, pentane, isopentane, etc., in contrast with segregating all as a part of natural gasoline.

Power Sources

As refiners make adjustments in their operations to meet war emergencies, some of them find it necessary to add substantial power-generating equipment to service especially large, special units, but the great majority of refineries find their utilities in balance with current needs. In those instances where large, special units are being installed, such as the alkylation, isomerization and catalytic cracking units, the steam-generating equipment is often being made a part of the unit itself and the electric power needed in addition to the normal plant requirements is to be purchased.

Refiners generally like to avoid increasing their investment in power producing more than is just necessary to guarantee constant operation, and with electric power available at practically all major refining centers, the refiners have not as a rule installed separate units.

Also, as a part of the power problem, the refiner has tried to balance his steam production to best utilize the steam power available but seldom installed increased boiler installations to take care of loads that could be handled by purchased electric power.

BOOK REVIEW

WAR PROTECTION OF THE GAS INDUSTRY. American Gas Association, New York City. $2.50 to member companies. $5.00 to others.

This loose-leaf book is not bound, but is punched for use in a ring binder. Material constitutes the basic release of war-protection studies in accordance with the classification system. The material is in two parts. Part 1 is incomplete, and will be added to from time to time. This part has to do with protection against enemy action. Part 2 concerns emergency procedures, and can be considered as complete. It outlines procedures to be followed during and after enemy attacks, and describes results of various types of attack.

SMALL GASOLINE MOTORS HELP MAINTAIN
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On the front lines, as well as behind the front, our country's war program depends a great deal on constantly keeping communications open. Here again, as in many other branches of military and civilian service, Briggs & Stratton 4-cycle, air-cooled gasoline motors ranging from 2/3 to 6 HP, play a vital role, furnishing dependable power for many uses.
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GASOLINE MOTORS

Pipe-Line Engineers Keep Pace With Swift-Moving Changes

By PAUL REED

War emergencies have thrown a great burden on the pipe lines and the engineers and operating personnel are called on to develop means of moving more and more oil with little additional equipment. The conversion and the reversing of lines, the looping of certain types of lines which formerly it was considered impractical to loop, the use of 24-in.-diameter pipe for an oil line, greater use of centrifugal pumps, increase of the pressures employed on lines and other innovations makes the first 6 months of the year one of the most interesting in the history of pipe lining.

THE methods connected with pipe-line construction and operation which have received special attention recently represent for the most part improvements in standard practices which are particularly applicable to solving problems presented by the conditions which have come with war. The need for sending large shipments of crude and products northeastward through pipe lines, coupled with restrictions on obtaining pipe and pumping equipment, has called for much study of the economical use of materials. Looping of lines is being carried on for certain types of service where it has heretofore been considered impractical; this has been made possible by a new system of controls.

Electric centrifugal pumping equipment is now considered desirable for many main-line stations while formerly it was generally found in trunk-line service only at booster stations. More attention is being given to the possibilities of high-pressure operation. The advantages of superchargers are increasing in importance.

There is a certain overlapping of interests within the industry as gasoline lines are converted to crude-oil service and as plans are being made to convert certain crude lines to gasoline service. With large-diameter pipe being used for crude-oil transportation, the experience of natural-gas organizations with this type of construction has significance.

Furthermore, improvements have come in the natural course of events in methods for pipe-line construction, cathodic protection, hydrate removal for natural-gas lines, and inhibiting of internal corrosion of gasoline lines.

Big-Inch Line Uses Factory Bends

The decision of War Emergency Pipeline, Inc., to bend the 24-in. pipe with 3/8-in. wall thickness instead of using prefabricated bends known as factory bends, has been of interest to pipe-line men. There was some speculation as to whether factory bends which had been successfully employed in the laying of a large-diameter gas line last year might be adopted. In recent years there has been an increasing amount of cold bending of large-diameter pipe by certain construction organizations which have made a study of the requirements of this procedure. In the laying of a recent pipe line cold bending of large pipe was done in the field by the application of tractor power and special bending-block equipment which was made so that half the periphery of the pipe could be encompassed to prevent buckling and wrinkling.

Some experimenting has been done in the last year by several pipe-line-construction organizations for the object of developing plow-type equipment for ditching. Results so far show the importance of designing equipment which will not make excessive demands on tractor power. Most of the ditching of this kind has been done with the tractor pulling the plow. Recently some experiments with a plow that is pushed by a tractor have been reported as giving better satisfaction than operations by the same organization where the plow was towed by the tractor.

Another new piece of equipment which has been introduced into pipe-line construction is a holiday detector of an improved type that signals a warning by ringing a bell and flashing a light to indicate when imperfections in the enamel coating have been encountered.

Objectionable mixing of batches or tenders in

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Fig. 1 shows D-V Belts with concave side walls.

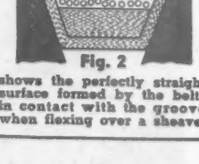


Fig. 2 shows the perfectly straight surface formed by the belts in contact with the groove when flexing over a sheave.

For detailed information on Dodge Power Transmission equipment, specifications and suggestions for "The Right Drive for the Job," see Dodge 16-page insert in the Composite Catalog of Oil Field and Pipe Line Operation.

THE RIGHT DRIVE FOR EVERY JOB

a looped line is eliminated by a type of control equipment which has been installed this year on a major gasoline trunk line. An ingenious method of controlling flow automatically by a diaphragm-valve control used with flow nozzles makes it practicable to take advantage of the economical use of pipe afforded by looping. This practice is of special significance in this war period.

With the need for utilizing pipe-line facilities to the utmost there are numerous cases where high pressures are being used for lines of all types. Crude and gasoline lines are being operated to a sufficient extent at pressures from 1,000 to 1,200 lb. to indicate that such a pressure range may be widely adopted by the industry in the future. The use of higher pressures makes it possible to lengthen the interval between pump stations. For several years a pump station of a gasoline line has been shipping approximately 16,000 bbl. daily at pressures in the vicinity of 1,100 lb. through 8-in. pipe for a distance of more than 165 miles. A natural-gas transmission line which was put in service in recent months to operate at 1,200 lb. pressure, was tested by building up pressures at the intake end of the line to 1,400 lb. and at the discharge end of the line to 1,300 lb. After maintaining these pressures for more than 24 hours to test for leakage, the line was put in operation. In order to correct the disturbing effect which compressor-discharge pulsations have on the accuracy of an orifice meter, a tank of a special design was installed at the terminus of the line. The main feature of this tank is a U-bend made of two ells and a nipple welded inside the tank to the outlet connection; the open end of the U-bend is placed a few inches from the inside wall of the shell of the tank. The tank is in a vertical position. Gas enters the tank through a nozzle and leaves through the U-bend. Consideration of the flow conditions is important in the proper design of the tank. During the delay when it was necessary to wait for the installation of the tank, compressor pulsations were severe. When the tank was installed and functioning this condition was cured.

Pump Station Practice

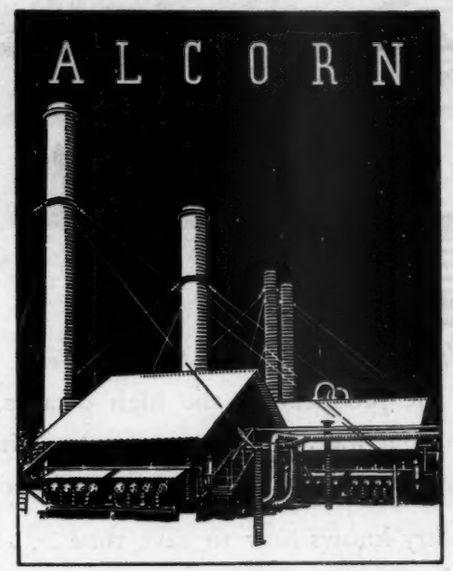
For supplying military operations new types of portable bolted-coupling lines have been developed by both the United Nations and Axis countries. Pipe can be rapidly laid on the surface of the ground by unskilled labor; pumping units are of a light type which can be easily moved and installed.

Great departures from customary pump-station practice in recent years have been made in the latest type of electric centrifugal stations for product-line service. The distinctive features have been developed further for the stations of new products lines put in operation early this year. Some of these features have an influence on the design of stations for the East Texas-Illinois 24-in. crude-oil line.

In the operation of a products line handling eight or nine products ranging from diesel fuel to gasoline it is important that the line be so equipped that continuous operation under specified conditions is assured. To avoid mixing of products of different tenders or shipments in contact with each other while in transit through the line, the rate of flow at a given pressure should be faster than a critical minimum which has been determined by experience. Otherwise, undesirable contamination will occur. Water slugs between tenders have been largely discontinued. The point of contact between tenders is determined by the difference in the colors of adjoining tenders or by a small amount of dye placed between the tenders or by determination of a change in gravity. An improvement over the common practice, of observing the gravity of a sample taken by hand in the manifold pit, has been achieved by the installation of equipment for making a continuous graphic record of specific gravity of shipments, by means of a gravitometer. This instrument has a spherical weighing chamber of a known volume, through which there passes a small amount of the fluid in the line. Weight of the fluid is recorded on a time chart (with corrections made for temperature) in terms of specific gravity. Some companies are making a practice of controlling movement of shipments by means of a teletype operated at the dispatcher's office. The same message may appear at all stations of a line simultaneously. Orders given are very specific and they may include those for starting and stopping units as well as stations. In the dispatcher's office the position of each shipment in the line may be observed at all times by the indications of a strip chart which moves at a specified rate past markers representing stations, which indicates the exact position of each shipment in the line.

Attendants control stations of the most modern types installed this year by means of push buttons. Instead of the attendant performing a number of operations at different points in the station his work is simplified by automatic equipment which handles starting or stopping in one complete sequence for valves, pump motor, and pressure control. Automatic control is important for insuring that line pressure be maintained within prescribed limits.

Out of this war period when the nation is making great demands on pipe-line facilities, when new materials are hard to get when maintenance practices are being stressed, it appears that a number of methods may be developed for emergency conditions which may have a lasting influence on the procedures of the industry.



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Among the speed-up tools that many refinery engineers are using are the new Key Bulletins for detailing refinery fittings and return bends. These Bulletins, an ambitious program of the Key Company, were in work long before the war. That they *are* available *now* to expedite the engineer's and draftsman's work—"to save precious hours in detailing"... is *only* because we specialize in making refinery fittings—place our entire effort in the service of the industry . . . as *we* always have.

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Fabricating Piping Systems By Electric-Arc Welding (Part 3)

By A. M. HILL
Superintendent of Line Maintenance,
Stanolind Pipe Line Co.

In a series discussing electric-arc welding this article completes the description of procedures which have been developed to improve operations connected with the welding of manifolds for pipe-line pump stations. In an early issue the series will be concluded by an article on various methods which have been devised to increase the overall welding shop efficiency.

(*g*) After the component parts have been assembled and tack-welded, the assembly is proof-checked by a foreman, preparatory to being placed on special dollies where the final welding operation is performed.

The equipment used for supporting and rotating the assembly during the process of final welding are shown in Figs. 11 and 11-a. Adjustable counterweights are used to balance the assembly and compensate for the weight of the long pieces of pipe projecting at right angles from the main manifold barrel. The counterweights facilitate the rotation of the pipe. The type of counterweight shown in Fig. 11 is attached to the member by the use of a U-bolt clamp. The arm of the counterweight is slotted so that the tool has a wide variation of adjustments and accommodates various types of members.

A different type of counterweight (shown in Fig. 11-a) is attached to the member by bolting the slotted arm to the face of the flange. The slotted arm serves a dual purpose of providing a means of attaching the counterweights, as well as making variable adjustments required for balancing different types of members. The use of counterweights in heavy construction can not be overemphasized. Without this feature two or three helpers are required to assist the welder in rotating the assembly during the process of welding. Before the use of counterweights, heavy members were welded in a fixed position. This method required a highly skilled welder; it was slow and costly; and it was difficult to obtain the quality of workmanship now possible by the use of counterweights.

The first type of counterweights used in fabrication work consisted of steel shafting 6 in. to 8 in. in diameter and as long as 15 in., tack-welded to the member at the proper point to balance the weight of the heavy pipe nipples. This type of counterweight, due to the possible failure of the tack welds, was hazardous.

(*h*) After the welding on each member is finished, it is allowed to cool to atmospheric temperature and the member is checked for minimum

Fig. 11 (left)—Equipment for supporting and rotating assembly during process of final welding. Fig. 11-a (right)—Adjustable counterweights to balance assembly

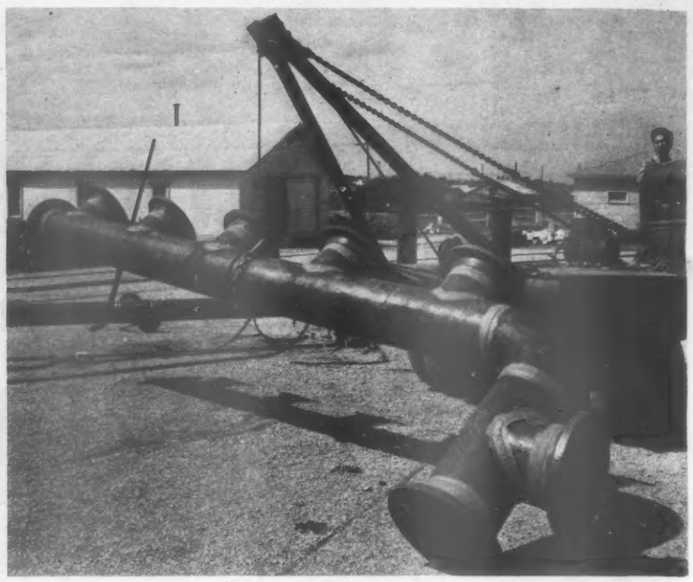


Fig. 12 (left)—Manifold barrel is supported by steel beams and V-blocks during straightening operation. Fig. 13 (right)—Truck winch handling manifold barrel after final inspection when it is ready for shipment

tolerances, misalignment, contraction in length, and distortion resulting from the welding. Practically all members must be straightened after welding. Correcting the misalignments constitutes checking and heating the barrel until the faces of all the flanges on the manifold barrel are in the proper alignment with each other and correspond with the dimensions shown on the detailed sketch. This straightening operation permits a tolerance of only 1/64 in. across the face of a 12-in. flange. The small members can be straightened by applying heat at the proper points without the use of jacks. This method is followed wher ever possible, as it avoids the possibility of damaging the manifold barrel beyond recovery. The mislaignment and distortion in the large heavy parts must be corrected by heating the assemblies at the proper points with acetylene torches, and applying the force (of a hydraulic jack) to relieve the stresses. This operation is very tedious and requires a highly skilled operator familiar with the contractive forces set up by the welding operation, as well as the danger of overstressing the heated metal with the jacks. This would tend to aggravate rather than correct the distorted conditions. Fig. 12 shows a large part in the process of straightening. It will be noted that a steel beam and V-blocks support the manifold barrel in the proper position during the straightening operation.

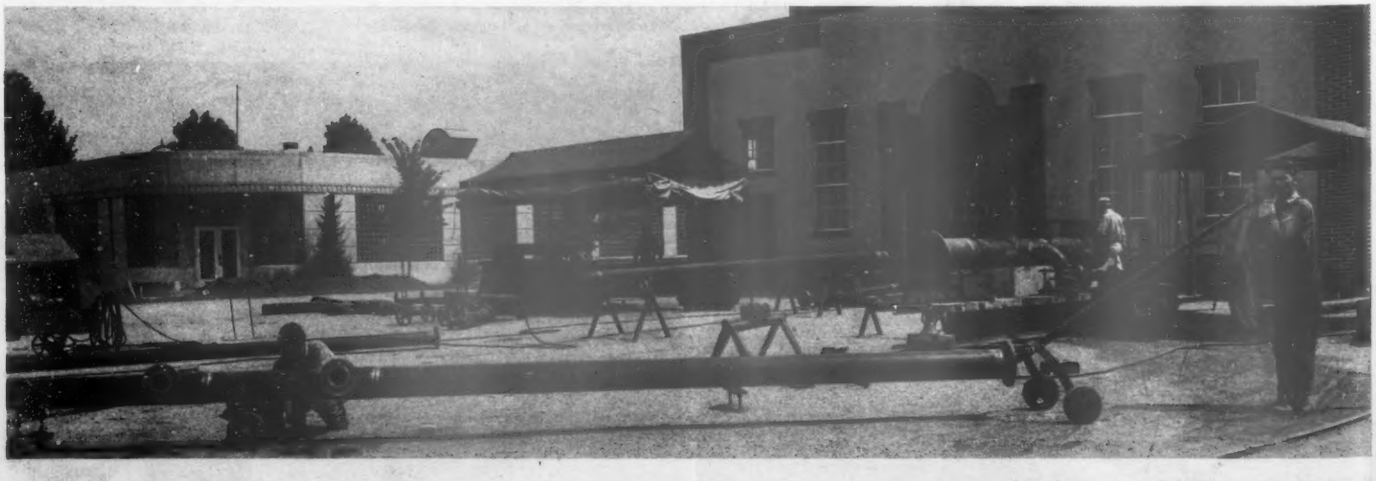
Fig. 14 (left)—Three types of hand trucks are used for handling long, heavy members. Fig. 14-a (below) shows truck having arched frame used to lift heavy manifold barrels on and off the truck. It has a V-shaped base

Inspected for Tolerances

After correcting the misalignments, the fabricated part is allowed to cool to atmospheric temperature before being finally inspected for minimum tolerances on both the faces of the flanges and centering of the bolt holes, after which it is approved for shipment. Fig. 13 shows an individual part after it has passed the final inspection and tagged for shipment.

The final inspection, which is one of the most important operations in connection with the fabrication of manifold piping systems, requires that rigid standards be established and followed to avoid the possibility of error which otherwise would not be detected until the manifold piping had reached its destination and was in the process of assembling. The misalignment of any one of the individual parts of the manifold would delay the assembly and unless corrected would leave a strain in the entire assembly. Because corrections in the field are slow and expensive, the utmost care should be observed in making the corrections before the members leave the shop.

(*i*) For safe, quick, and economical handling of the parts and the members, special equipment is used. The truck winch for handling heavy members is shown in Fig. 13. The use of three types of hand trucks for handling long heavy members is shown in Fig. 14. In Fig. 14-a the truck having the arched frame is used to lift the heavy manifold barrels on and off of the truck with the V-shaped base. These trucks are used as a unit when moving the long heavy manifold barrels (the heaviest barrels weigh over 4,000 lb.). The four-wheel platform truck equipped with roller-bearing wheels and solid-rubber tires facilitates moving heavy flanges and welding fittings in and around the shop. Although certain safety features of the equipment have been mentioned above, the hazards removed by the use of these special tools can be more fully appreciated by the fact that only one lost-time accident has occurred in this shop during the past 5 years.



Development, Operation and Valuation of Oil and Gas Properties—Part 10

Recovery From Oil Reservoirs

By PARK J. JONES
Petroleum Engineer, The Texas Company

The technique developed by Sage and Lacey under Research Project 37 of the American Petroleum Institute is rapidly becoming routine practice for determining fundamental data on gas-oil mixtures. In this installment Mr. Jones shows how the volume factors determined by the Sage-Lacey method can be used to make accurate estimates of oil recovery by either gas expansion or water drive. This contribution, prepared especially for The Oil and Gas Journal by Mr. Jones, has never before been available to the industry.

THIS installment is intended as an introduction to oil reservoirs. Equilibrium conditions are assumed. For reservoirs having regional pressure gradients, equilibrium conditions can be approximated by applying weighted average reservoir pressures.

The order of discussion is as follows:

A. Recovery by expansion of undersaturated oil; no encroachment of water.

B. Recovery of undersaturated oil by 100 per cent water drive.

C. Recovery of oil by expansion of solution gas; no primary gas cap; no water encroachment.

D. Recovery of oil by expansion of solution and primary gas-cap gas; no water encroachment.

E. Recovery of oil by partial water drive.

The equations on recovery of oil in this installment are based on the assumption that solubility of crudes in gases can be neglected. For this reason, the equations should not be applied to deep-seated reservoirs containing high-gravity crudes.

A. Recovery of expansion of undersaturated oil: no water encroachment.

1. *Solubility of gas in oil.*—The number of cubic feet of a particular gas dissolved in a barrel of a given oil at a given pressure and temperature is called solubility and is denoted by g. Figs. 28 and 29 are illustrative examples of gas solubility in a particular low and high-gravity crude, respectively.

The reservoir pressure required to just hold a given volume of gas in solution in 1 bbl. of oil is called bubble-point pressure and the oil is said to be at bubble point.

Bubble-point pressure and solubility are usually determined in a laboratory from subsurface, or trap, samples. Their approximate value can be calculated also under certain conditions. For the purposes on hand, it is assumed that solubilities and bubble-point pressures are known.

2. *Reservoir bubble-point and reservoir space.*—The initial reservoir pressure is denoted by P_i. If a decline in reservoir pressure below P_i does not cause gas to evolve from solution, a reservoir has no gas cap and the oil is said to be undersaturated. As the pressure continues to decline, a value is ultimately approached below which gas does evolve from solution. The pressure at which gas begins to evolve from solution is called reservoir bubble point and is denoted by P_b. Reservoir bubble point is not to be confused with bubble-point pressure for oil.

Reservoir space V is defined by

$$V = 7758\ [ahf\ (1—S_w)]$$

V = reservoir space, barrels
a = acres
h = average pay thickness underlying a, feet
f = average porosity of ah, fraction of ah
S_w = average interstitial water content, fraction of porosity

3. *Volume factor:* The volume factor J for a mixture of oil and gas is the number of barrels of reservoir space containing 1 bbl. of oil, that is

$$J = b + B \qquad (1)$$

where
b = volume factor for oil containing dissolved gas, barrels space per barrel oil
B = volume factor for the free gas associated with 1 bbl. of oil, barrels space per barrel oil

If there is no free gas in a reservoir, $B = 0$ and $J = b$. Figs. 28 and 29 are illustrative examples of the volume factors for a particular low and high-gravity crude, respectively, exclusive of free gas.

4. *Saturation.*—Oil saturation S is the number of barrels of oil in 1 bbl. of reservoir space. that is,

$$S = 1/(b+B) \qquad (2)$$

but if there is no free gas in a reservoir, $B = 0$ and $S = 1/b$.

5. *Availability.*—In the absence of water encroachment and aside from compaction of media and expansion of interstitial water, the volume of oil recoverable on the average per pound pressure decline in the interval $P_b \leqq P \leqq P_1$ per million barrels of oil in place is called availability, A and is defined by

$$A = \frac{10^6}{P_1—P_b}\left(1 - \frac{S_b}{S_1}\right) \qquad (3)$$

Table 10 is an illustrative example of availability based on the data in Figs. 28 and 29.

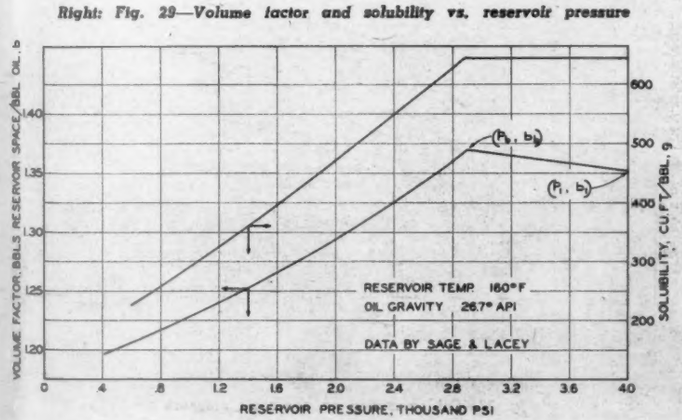
TABLE 10—ILLUSTRATIVE EXAMPLE OF AVAILABILITY

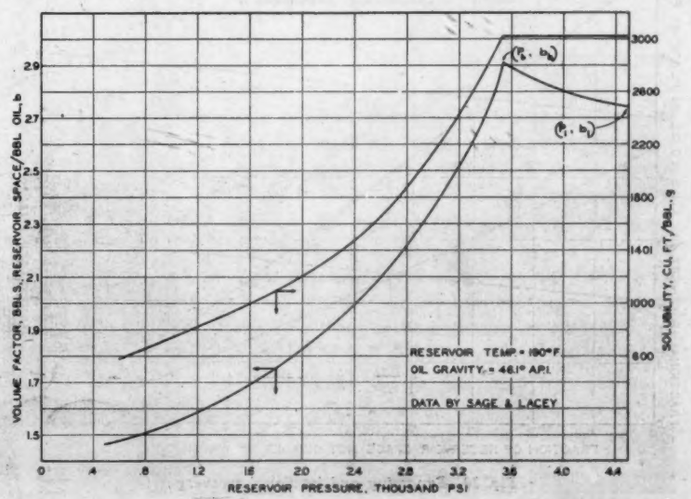
	Gravity of oil	
	Low	High
Original reservoir pressure	4000	4500
Reservoir bubble-point pressure	2900	3440
$P_1—P_b$	1100	1060
Original saturation, S_1, bbl. oil/bbl. space	0.7407	0.3650
Saturation at P_b, S_b, bbl. oil/bbl. space	.7299	.3436
$1—S_b/b_1$	.0146	.0586
A, bbl. oil recoverable/lb. per sq. in./million bbl. oil in place	13.3	55.3

Within the limits of possible reservoir conditions, recovery of undersaturated oil ranges from about 5 up to about 60 millionths of the oil in place per pound decline in pressure. Whence, it follows that reservoir pressure declines abruptly down to the reservoir bubble point provided there is no encroachment of water. Ruling out water encroachment for the moment, it also follows that the ultimate recovery is negligible in those instances where the reservoir bubble point does not materially exceed the abandonment pressures. There must be a natural or an artificial

Below: Fig. 28—Volume factor and solubility vs. reservoir pressure

Right: Fig. 29—Volume factor and solubility vs. reservoir pressure




VOLUME FACTOR, BBLS. RESERVOIR SPACE/BBL. OIL, b
SOLUBILITY, CU. FT./BBL., g
RESERVOIR PRESSURE, THOUSAND PSI
RESERVOIR TEMP. = 180°F.
OIL GRAVITY. = 46.1° API.
DATA BY SAGE & LACEY
(Pb, bb)
(Pi, bi)

source of pressure of sufficient magnitude in order that a sizable fraction of the oil originally in place can be recovered.

6. *Sources of pressure.*—Aside from expansion of undersaturated oil and compaction of media and expansion of interstitial water, the sources of pressure are as follows: Artesian and elastic encroachment of bottom and edge water; solution gas; primary gas-cap gas; gravity; and injected gas and water.

B. Recovery of undersaturated oil by 100 per cent water drive.

7. *Artesian and elastic encroachment of water.* Movement of water into a reservoir is called water encroachment. Artesian encroachment is used in the sense that "water runs downhill." If a trap outcrops or is interconnected with surface waters, the trap is replenished with water continuously or seasonally. The downward movement of water is artesian encroachment.

Elastic encroachment refers to expansion of water. The availability for water is about 4 bbl. In other words, a pound decline in reservoir pressure causes about 4 bbl. of water to move into a reservoir for each million barrels of water in place. However, if small isolated volumes of gas are trapped downdip from an oil reservoir, a pound decline in reservoir pressure causes more than 4 bbl. of water to move into a reservoir.

Water encroachment as here used refers to a reduction in reservoir space irrespective of whether the movement of water into a reservoir is essentially artesian, elastic, or a combination of the two. If water encroaches into a reservoir in which the pressure is not less than the reservoir bubble point, oil is said to be produced by 100 per cent water drive or simply by water drive.

8. *Recovery by water drive.*—If a pressure decline in the interval $P_b \leqq P \leqq P_1$ causes water to encroach into a reservoir, a 100 per cent water drive prevails aside from the recovery by expansion of undersaturated oil. The cumulative recovery by water encroachment is proportional to bypassing and to the decrease in reservoir space. Bypassing as here applied is the combined effect of two factors which reflect the pore space not invaded and the quantity of oil displaced from the invaded pore space.

Let V_b equal the reservoir space relative to no water encroachment and V the reservoir space at a given time. The reduction in reservoir space is equal to $V_b - V$. Let X equal the instantaneous bypassing expressed as a fraction of the space being invaded. The average bypassing X_a corresponding to a reduction in reservoir space from V_b down to V is defined by

$$X_a = \frac{\int_V^{V_b} X dV}{V_b - V} \qquad (4)$$

and cumulative recovery C by

$$C = S_b (V_b - V) (1 - X_a) \qquad (5)$$

The fractional recovery F relative to the oil in place at reservoir bubble-point pressure is defined by

$$F = \frac{C}{S_b V_b} = \frac{(V_b - V)}{V_b} (1 - X_a) \qquad (6)$$

Fig. 30 is an illustrative example of water encroachment. The lines for instantaneous bypassing are roughly the upper and lower limits of bypassing likely to be encountered in practice. The fractional recovery curves represent the upper and lower limits of recovery by water encroachment.

The total recovery from a reservoir containing undersaturated oil corresponding to the pressure interval $P_b \leqq P \leqq P_1$ is equal to the recovery by expansion of oil plus the recovery resulting from water encroachment. Whence, if cumulative recovery is equal to many times the availability, a water drive exists.

C. Recovery of oil by expansion of solution gas; no primary gas cap, no water encroachment.

9. *Volume factor for a mixture:* The volume factor J for a gas-oil mixture is equal to the volume factor b for bubble-point oil plus the volume factor B for the free gas associated with 1 bbl. of oil, that is,

$$J = b + B = b + 0.00504 \frac{TZ}{P} (G - g) \qquad (7)$$

G = all the gas associated with oil, cu. ft. per barrel

g = solubility at T and P, gas in solution, cu. ft. per barrel

$G - g$ = free gas associated with a barrel of oil, cu. ft. per barrel

J = barrels of reservoir space required to hold 1 bbl. of oil

At reservoir bubble-point pressure, that is, at P_b there is no free gas associated with oil. $B = 0$ and $J = b_b$ where b_b is the volume factor at P_b. The point on the extreme right-hand side of Fig. 31 is an illustrative example of $J = b_b$ for the oil and gas at P_b in a particular reservoir. The solubility corresponding to this point is denoted by g_b.

If oil could be produced with a gas-oil ratio equal to g_b, the gas-oil ratio G for the oil remaining in a reservoir would be equal to g_b but at pressures P less than P_b some of the gas originally in solution would evolve and become free gas. On the other hand, if oil is produced, as it usually is, with a gas-oil ratio which is greater than g_b, the gas-oil ratio G for the oil remaining in a reservoir is less than g_b. The curves in Fig. 31 are solutions of Equation 7 for various values of G in a particular reservoir.

10. *Oil saturation.*—Oil saturation in the case of mixtures is defined by

$$S = \frac{1}{J} = \frac{1}{b + 0.00504 \frac{TZ}{P} (G - g)} \qquad (8)$$

The curves in Fig. 32 are solutions of Equations 8 for various values of G in a particular reservoir. These saturation curves correspond to the volume factor curves in Fig. 31.

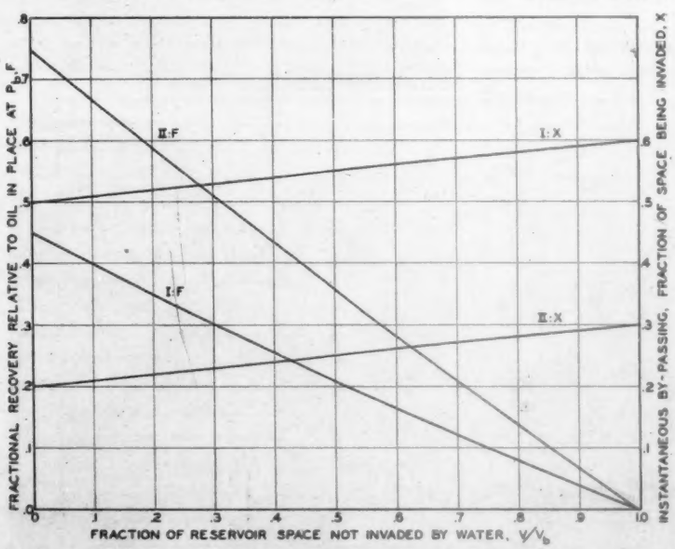

FRACTIONAL RECOVERY RELATIVE TO OIL IN PLACE AT P_b, F
INSTANTANEOUS BY-PASSING, FRACTION OF SPACE BEING INVADED, X
II:F
I:X
I:F
II:X
FRACTION OF RESERVOIR SPACE NOT INVADED BY WATER, V/V_b

Fig. 30—Bypassing and fractional recovery

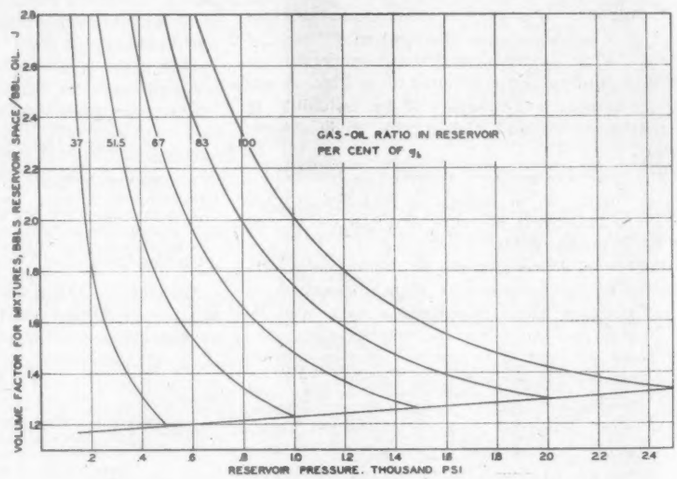


Fig. 31—Volume factor vs. reservoir pressure

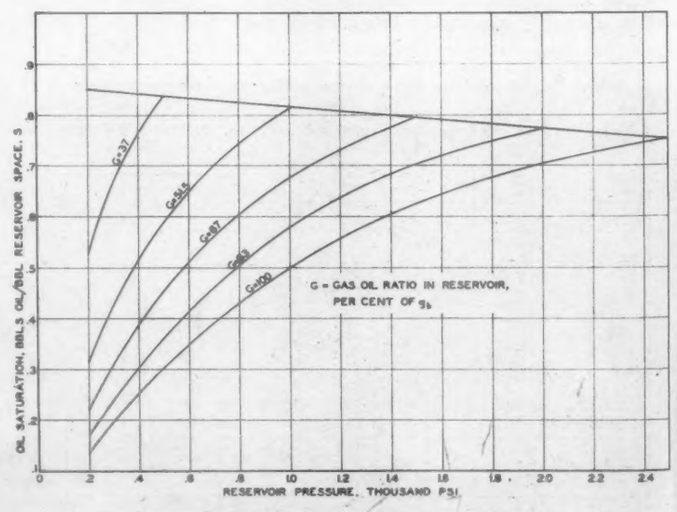
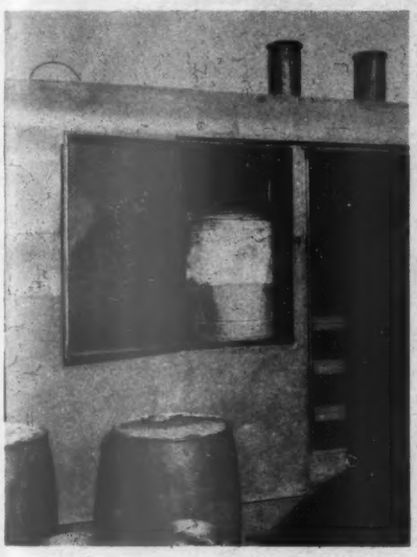


Fig. 32—Oil saturation vs. reservoir pressure

Operating Ideas

Water Cooler in Dog-House Alcove

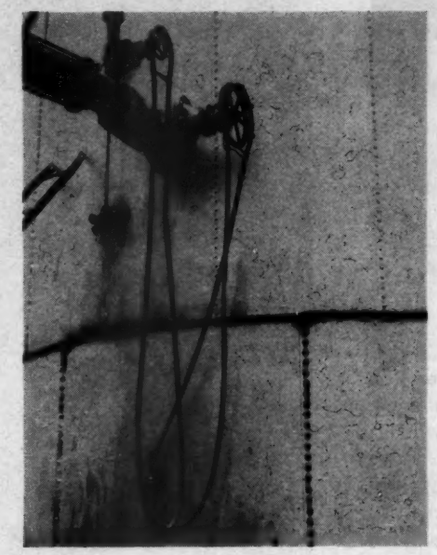
A bin of proper size, fabricated by the welder from light tank steel and welded into the steel dog house adjacent to one of the doors, provides space for the water cooler, and effectively protects it alike from sun's rays and from accidental damage. A notch through one side of the



cabinet or bin permits the faucet to protrude into the aisle, enabling water to be drawn from within the house. Space above the cooler permits it to be reiced without need for removal from the bin. The steel door forming the outside of the bin is provided with hasp and staple for padlocking. Cooler is left in cabinet when dog house is moved to a new location.

V-Belts For Gate Controls

On field treating plants it is sometimes impossible to locate all valves in positions readily accessible to the operator. It is recognized that the placing of valves in positions where it is necessary to climb a ladder is to be avoided, for the valves are likely to require frequent operation or adjustment, and records show that a large



per cent of industrial accidents are caused by ladders. At an oil-treating plant in the East Texas field all valves that are out of reach from the ground have been equipped with old V-belts that have been discarded from drilling rigs. The number of occasions requiring the operator to climb ladders or stairs has thereby been greatly reduced.

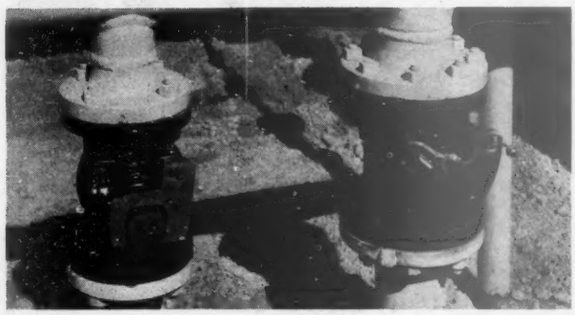
Easily Lifted Catwalk

A drilling barge, when on location, is connected with its companion boiler barge by a steel catwalk, which not only provides the means for crewmen going from one barge to the other but also supports the steam and water lines. The catwalk is fastened to the drilling barge on a roller hinge which permits the raising or lowering of the walk during barge moves. The walk is lifted by means of a winch on the drilling barge and a wire line over a block in the top of the derrick to the boiler barge end of the walk. For lifting it is only necessary to remove the steam and water line couplings at each end of the catwalk. The lines remain in place. A special winch, operated from the draw works is provided for raising and lowering the catwalk when it is desired to move the barges or separate them for any reason.

Gin Pole For Loading Tubing Truck

Numerous accidental injuries are suffered by men working in the production department when lifting heavy objects. In addition to back sprains there is always the danger of mashing fingers or toes while placing equipment on a truck. A Gulf Co. tubing crew in East Texas uses the arrangement shown for loading tubing spider, elevators, rod basket, traveling block, etc., on the truck bed. It consists of an 8-ft. upright made from 2½-in. tubing bolted to the engine skid on the unit, two snatch blocks, a rope and the cathead on the tubing unit. In the picture are Roustabouts G. D. Holder, Larry Emmons and G. C. Huckaby, and Foreman G. W. Toney on the truck. Picture courtesy of Gulf Safety News.

Refinery IDEAS ... that save $ $ $



Method of Sealing Valves

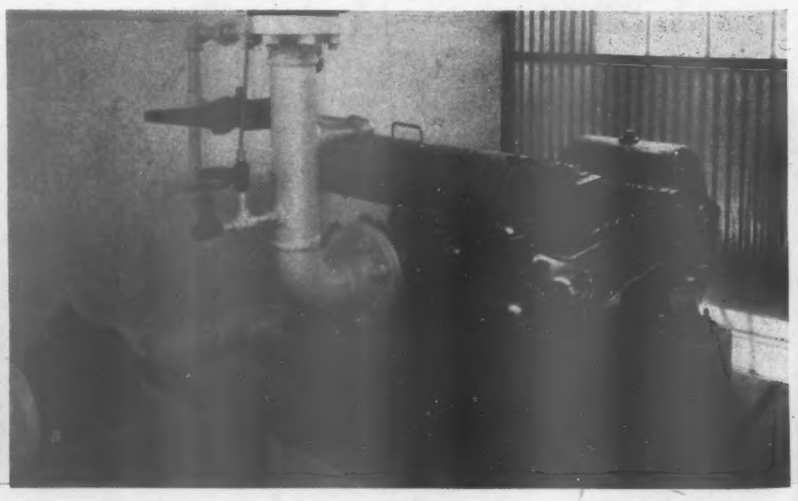
Because one refiner could no longer get delivery on standard valves that had provisions in place for sealing, he set about to develop a substitute. Here is shown his answer. The plate which fits over the flattened valve stem is cut from ½-in. metal. The arm extending upward from the main portion of the plate has been pierced to slip over an eye-bolt. One of these eye-bolts has been screwed into position on either side of the valve stem and accommodates the plate when in place for an open or closed position of the valve.

Strong Steps Made From Junk Pipe and Planks

Short lengths of scrap pipe of small diameter welded to serve as a frame for mounting a series of wooden steps are available in every refinery. Also, there is need for a short series of steps in every refinery. Here a relatively light and serviceable assembly is shown. The wooden steps are bolted in place and while they are inflammable, the advantage of the lighter weight of wood and the better traction wood provides coupled with the scarcity of steel plate as compared with wood, left no choice. The bolted planks are sufficiently rigid to help keep the frame in shape and the lower portion is further braced by the two crossmembers.

Shield Over Shaft Connecting Engine and Pump

Safety, convenience, and economy of materials have been incorporated in the housing provided by the shaft which connects the pump and the engine on opposite sides of a partition. This partition is used here as a fire wall. The housing around the connecting shaft is made up in two sections, the lower half being bolted to the circular plate on the engine. The top of the housing swings along the long side from two hinges and when in use rests on the opposite edge and is held in place by two swinging clamp-bolts. The handle on top of the upper half enables the operator to quickly and conveniently expose the greater part of the shaft in case of a repair. A feature of this particular installation is the use of a liquid drive. This portion of the equipment is shown in the picture at the left setting on an independent foundation and is located inside the housing between the shaft protector and the engine.



We Learned the HARD Way

ONLY a few years ago manufacturers of oil field equipment worked to tolerances designated by fractions of an inch. It was a big step forward when the term "thousandths" was generally adopted, but we did not really learn the full meaning of "plus or minus" until we were initiated into Government inspection.

The same fine precision methods required to meet Government specifications are being used in the manufacture of "Texasteel" sucker rods.

TEXASTEEL MANUFACTURING COMPANY

FORT WORTH, TEXAS

QUESTIONS ON TECHNOLOGY

By W. L. NELSON, Technical Editor

Paratone and Other Oil Additives

We would like to know of such dopes as paratone, con naphthalene and paraffin, tributyl phosphate, and e.p. base dope, for improving lubricating oils, particularly the manufacturers.—D. J. K.

In general the larger oil companies such as the Standard companies, Gulf Oil Corp., Texas Co., and most others have branches or distribution companies for various chemicals, and likewise the major chemical companies such as E. I. DuPont de Nemours, Dow Chemical, American Cyanimide Co., etc., would be expected to market some of the additive agents used in lubricating oils.

Paratone is a pertoleum product made by polymerizing isobutene. It is used to improve the viscosity index of lubricating oils. From 2.5-8 per cent of this material will raise the index of Mid-Continent oils to 100, and the same amount will raise the index of Coastal oils to 70-75.

Paraflow, the well-known pour-point depressor, is a condensate product of naphthalene and a paraffin and is perhaps the second material you mention. From ¼ to 1.5 per cent of this material will lower the pour point of most oils from 30° F. down to below 0° F. The material can be more accurately described as a chlorinated paraffin wax to which is added chlorinated naphthalene material.

Tributyl phosphate when used with four parts of tricresyl phosphate is said by Downing, Holbrook and Fuller (The Oil and Gas Journal, p. 70, June 15, 1939) to be an anticatalytic agent, inhibiting the catalytic effect of the iron, copper, etc., parts of the engine which promote the oxidation of the oil. Thus, indirectly this material is an antioxidant.

A large number of extreme-pressure lubricant dopes or additives are employed and hence only the most common classes of materials can be mentioned. These are, lead-soap-sulfur-lubricants, sulfur-base lubricants, and chlorine-base lubricants. The lead-base lubricants contain the lead soaps of fatty or naphthenic acids which are combined with sulfur. The sulfur-base lubricants are prepared by blending a lubricating oil with a saponifiable oil which has been treated with sulfur. The chlorine-base lubricants are made by blending a lubricating oil with a saponifiable oil which has been treated with sulfur chloride.

It must be stated that there are literally hundreds of lubricant additives which have been proposed, or studied, but in most instances their worth has not been exclusively proved. A few are definitely useful, many are probably useful, and a few are probably of no value whatever.

Simplified Flow Diagrams

Ethylene Chloride From Petroleum

Can you refer me to any article which has appeared in The Oil and Gas Journal, or to other authority, on the commercial manufacture of ethyl chloride?—A. M.

Specialized chemical processes such as the commercial manufacture of ethyl chloride or ethylene dichloride are not usually described in detail in magazine articles. So few plants operate for such materials that details of their operation are valuable trade secrets. Of course dozens of patents are available but these disclose little in the way of practical details.

Two methods of manufacture are mentioned most often, i.e., reaction of ethylene or alcohol with hydrochloric acid, and the reaction of ethane or ethylene with chlorine. Most experimenters have found that a catalyst is necessary. Numerous catalysts have been mentioned such as aluminum chloride, ferric chloride, antimony or bismuth trichlorides, or the chlorides of zinc, tin, or barium.

An example of the type of operation or equipment is shown on this page, as taken from U. S. Patent 1,950,720, granted to G. Egloff on March 13, 1934. This process involves heating gaseous hydrocarbons and chlorine in a reaction zone at 250°-750° F. The reaction is halted at precisely the proper degree by injection of cold gases. Heavy products are separated in a fractionating tower and the chlorinated hydrocarbons (mainly monochloroethane and dichloroethane) along with some permanent gases pass overhead to a condenser. Catalysts other than the effect of metal surfaces in the equipment are not necessary.

The manufacture of ethyl chlorides is related to petroleum only because ethane or ethylene are common constituents of natural gas or cracking-still gases.

Styrene From Petroleum For Synthetic Rubber

We have heard that styrene as well as butadiene can be made from petroleum. How is this done?—C. O. W.

Direct methods of making styrene from petroleum are probably not available, but ethylene gas and benzene can be made from petroleum. These two materials combine readily in the presence of a catalyst such as phosphoric acid to produce ethyl benzene, which material can then be dehydrogenated to styrene. Ethylene is a sizable constituent of most cracking-still gases, and can be produced in large quantities by the dehydrogenation of natural gas or those natural-gas hydrocarbons that are heavier than ethane. Benzene is produced in enormous amounts in many refinery processes such as the hydroforming, polyforming, or fluid catalytic processes for producing high-octane gasoline, but it is present in only small percentages and mixed with other hydrocarbons to such a degree that separation of it is expensive.

Ethylene can also be produced with ease by splitting water from ethyl alcohol in a process which involves heating to 500°-650° F., in the presence of phosphoric acid as a catalyst. Thus it is possible to make ethyl benzene by the direct union of alcohol and benzene at elevated temperatures in the presence of phosphoric acid. The ethylene tends to polymerize under these conditions and also to produce other alkylated benzenes by side reactions or third-order polymerization reactions, and hence its concentration in the reacting fluid must be kept low, perhaps to less than 10 per cent of the volume of the reacting fluids. This may be accomplished by recycling of benzene. Yields are high under these conditions, being over 95 per cent on a mol basis.

The chemical reaction may be expressed as:

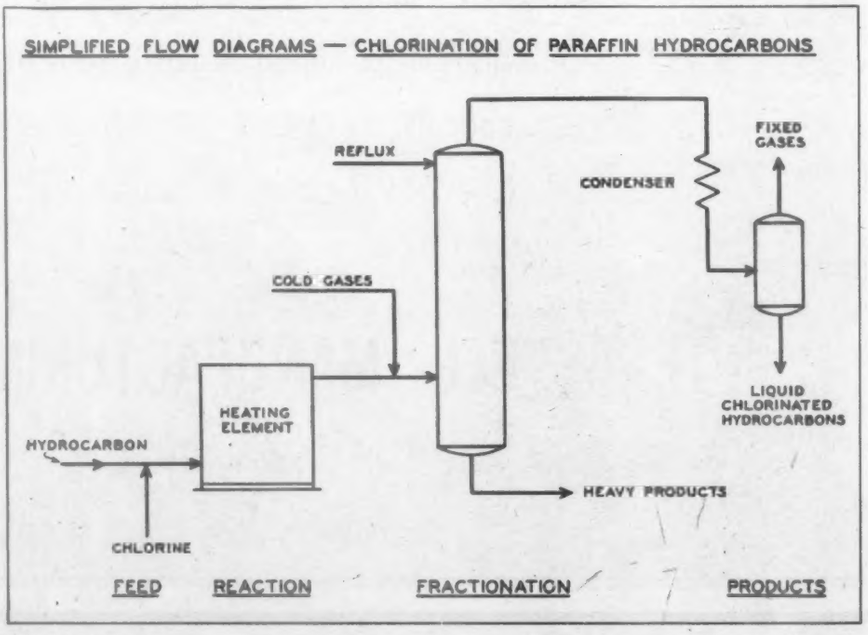
$$\underset{\text{Ethyl alcohol}}{C_2H_5OH} \longrightarrow \underset{\text{Ethylene}}{C_2H_4} + \underset{\text{Water}}{H_2O}$$

$$\underset{\text{Ethylene}}{C_2H_4} + \underset{\text{Benzene}}{C_6H_6} \longrightarrow \underset{\text{Ethyl benzene}}{C_6H_5.C_2H_5}$$

although both reactions take place simultaneously. In the petroleum industry it would be possible to start directly with ethylene rather than alcohol. The ethyl benzene can then be dehydrogenated to styrene as follows:

$$\underset{\text{Ethyl benzene}}{C_6H_5.C_2H_5} \rightarrow \underset{\text{Styrene}}{C_6H_5.C_2H_3} + \underset{\text{Hydrogen}}{H_2}$$

Styrene is used with about three parts of butadiene in the manufacture of buna-S synthetic rubber.



CO$T Engineering

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL

JULY 30, 1942

ESTIMATING COST OF REPRESSURING SMALL LEASE

THERE are numerous small leases in the country, the owners of which occasionally consider the feasibility of repressuring with either gas or air. Unfortunately, many operators look upon repressuring as an expensive operation and one which prolongs the time required to recover the oil. Actually, the reverse is true, as a comparatively modest and safe investment will result in increasing substantially the daily average output from the wells and a reduction in the time required for depletion.

The principle of repressuring is not difficult to follow. In many stripper areas the producing horizon is entirely devoid of pressure or it may have a negative pressure, or vacuum on it. By increasing the pressure in certain spots (around the input wells) the oil is forced to migrate to areas of lesser pressure and toward the output wells. The vacuum on some fields is so great that a partial repressuring program could be effected by simply opening the casing to the atmosphere. Consequently, if facilities are installed for injecting either gas or air at a few pounds pressure, a production increase can be expected, always providing the field is at all susceptible to repressuring.

An elaborate plant is not needed to create this pressure. A small plant containing a single-stage compressor and the few necessary auxiliary items are sufficient for most small leases producing from shallow horizons.

Determining Pressure Needed

There has been a number of theoretical methods of determining the pressure needed to repressure a lease. Some idea can be obtained by coring the zone to be repressured and analyzing the core. A little testing of the wells will give a starting point on which to work.

For instance, tests on a theoretical property showed that the shut-in pressure was 10-in. Hg vacuum. While producing the wells showed a vacuum of 26-in. Hg at which pressure they produced 3,000 cu. ft. per day. If this condition were reversed and a pressure applied to gas injection, a 10-in. differential should permit the placing of 3,000 cu. ft. per day into the formation. If the injection pressure is increased to four times the differential it should be possible to put two times as much gas into the pay formation. This is simply a rule-of-thumb method in which flow is considered as being proportional to the square of the pressures.

After measuring as many of the wells as possible, the area to be repressured and the spacing pattern must be selected. Suppose the property consists of 160 acres surrounded by leases owned by other operators. By selecting the 40 acres in the center of the lease repressuring can be started without danger of driving oil from under the property. If the offsets begin a similar program, or are later willing to cooperate, the project can be expanded to include the entire 160 acres. A five-spot pattern can be used and assuming that there are already five wells on the 40 acres, it will be necessary to drill 4 input wells and 12 producing wells.

The doubling of the gas production from each of the producing wells would result in a total production of 96,000 cu. ft. per day which would require the injection of 25,000 cu. ft. in each input well. This leaves 29,000 cu. ft. to go into the reservoir to build up the pressure.

The price of gas in the particular field determines whether the gas, air or an air-gas mixture should be used. In the assumed pool the gas cost $0.20/1,000 cu. ft. and it is decided to use a 50-50 gas-air mixture.

Injection pressure must be estimated with care being taken to make sure that sufficient compressor capacity is available to step up the injection rate or the pressure if it is needed. Selecting a discharge pressure of 45 lb. per sq. in. and with the intake of 16 in. Hg, approximately, a compressor to handle the required amount of gas would need approximately a 25-b.hp. prime mover. Here again the decision must be made as to whether an internal-combustion engine or an electric motor is used.

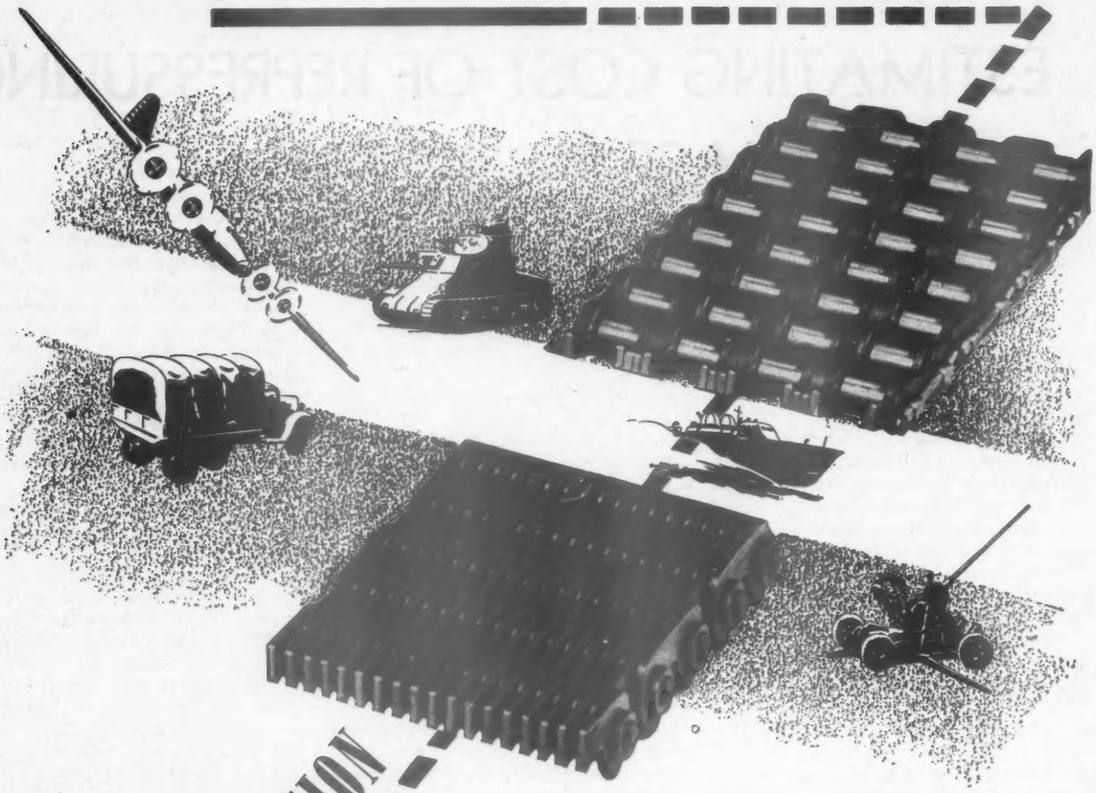
Cost of the plant, including foundation, steel building, radiator cooling for the compressor cylinder jacket water, second-hand compressor and electric motor in this case ran around $1,500. Cost of new wells would be $4,500 for the new producing wells and $3,700 for the injection wells. There will need to be 12 new producers and 4 new input wells drilled at a total cost of $68,800. Field lines cost another $500, and $2,500 should be added for other equipment. The total investment for repressuring the 40 acres becomes $73,300.

An estimate of the reserves of the lease shows that there is approximately 18,000 bbl. recoverable oil per acre. The operation will affect more than the 40 acres in the center of the lease, so actually more than the immediate acreage can be credited to the repressure area.

The length of time required to produce this reserve is important and hence, stress should be laid on the production increase resulting from the gas-air injection. Production of the 16 producing wells immediately around the injection wells mounts from 3 bbl. per day to 16 bbl. per day. Operating costs come down from approximately $0.31 to $0.17 per barrel. The net from the oil is $1.01 leaving $0.84 per barrel for retiring the investment, interest, taxes and overhead. The production increase from 12 bbl. per day from the four wells to 256 bbl. per day from the 16 wells steps up the income from $10.08 for the 40 acres to $215.04. At this rate of income, and deducting reasonable charges for taxes and overhead, the investment needed for the repressuring will be retired in approximately 1½ years.

The assumed property described is far above the average but it is by no means unusual as there are many leases in stripper areas which would show similar results under sound repressuring methods. The main difficulty is the change of the formation not being susceptible to repressuring due to a peculiarity in the sand condition. After making the needed investment in such a property, only a small production increase is obtained and the project eventually has to be abandoned without the return of the capital.

VITAL *LIFE LINE* IN WAR PRODUCTION



POWER TRANSMISSION

As vital as any production tool, the transmission of power directly affects every branch of war production. On it, to a good degree, depends the speed, accuracy and quality of every machine.

Poorly installed, inefficient drives can easily be a drag on machine production and a source of endless power waste through slippage, friction, creep and chatter. Protect this vital life line with Morse Silent and Roller Chain Drives. No slip, no power waste—these smooth-running, compact drives transmit total power at constant high efficiency for years on end. They always maintain the correct speed ratios . . . reduce bearing wear and are unaffected by atmospheric conditions, overloads and shocks. There is practically no maintenance factor.

Whether your drive requirements be conventional or unusual, there is a Morse Silent or Roller Chain Drive in single and multiple widths to fulfill your exact demands. Sizes from fractional to 5000 horsepower. Morse Representatives everywhere are ready to help increase your productive out-put — engineer chain drives to the job.

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SILENT CHAINS ROLLER CHAINS FLEXIBLE COUPLINGS CLUTCHES

MORSE *positive* DRIVES

MORSE CHAIN COMPANY ITHACA N. Y. DIVISION BORG-WARNER CORP.

Engineering Fundamentals

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL No. 30

JULY 30, 1942

PROPERTIES OF SATURATED STEAM

STEAM has long been a popular form of power for certain oil-field operations, particularly drilling. During the past several years, steam power for drilling has had an increasing amount of competition from other forms of power such as internal-combustion engines and electricity. Nevertheless, the steam-generating plant is still extensively used in drilling and other oil-field operations.

In order to become acquainted with methods of engineering calculations relating to steam power, it is first necessary that one have a proper understanding of certain fundamental properties of steam and of accepted terminology pertaining to steam.

Under a pressure of 14.7 lb. per sq. in., water boils at 212° F., passing off as steam. At pressures below 14.7 lb. per sq. in. abs., the boiling point of water is below 212° F., while at pressures above 14.7 lb. per sq. in., the boiling temperature of water is greater than 212° F. Thus, the temperature at which vaporization occurs is controlled by the absolute pressure exerted upon the water.

Saturated steam is steam which exists at the temperature corresponding to the boiling point of water at the existing pressure. Saturated steam may be in either a wet or dry condition.

Dry saturated steam is saturated steam not containing any free moisture.

Wet saturated steam is steam carrying some particles of entrained water. It has the same temperature as dry saturated steam at the same pressure. *Quality* is a term used to designate the dryness of steam, and is expressed as the ratio of the weight of dry steam present to the total weight of the steam.

In the production of saturated steam, the heat added to each pound of water is utilized in two stages. The first stage consists of raising the temperature of the pound of water up to its boiling point at the existing pressure. The heat necessary to accomplish this is termed the *heat of the liquid*. The second stage consists of adding enough heat to the pound of water to convert it into steam at its boiling point without a change in temperature. The heat added in this second stage is termed the *heat of evaporation* or the *latent heat of vaporization*.

The *total heat*, or *enthalpy*, of a pound of dry saturated steam is the sum of the heat of the liquid and the latent heat of vaporization. The total heat, or enthalpy, of a pound of wet saturated steam is less than that of a pound of dry saturated steam. When the water is not completely vaporized, the latent heat of vaporization carried by each pound of steam is proportionately less. The total heat of 1 lb. of wet steam is then equal to the heat of the liquid plus the product of the quality and the latent heat of vaporization, or,

$$h_s = h_f + x\, h_{fg}$$

where:

h_s = total heat of wet steam, B.t.u. per pound.
h_f = heat of the liquid, B.t.u. per pound.
h_{fg} = latent heat of vaporization, B.t.u. per pound.
x = quality of steam, expressed as a fraction.

The *specific volume* of dry saturated steam at any pressure is the volume, in cubic feet, of 1 lb. of steam at that pressure. The *density* of dry saturated steam, in pounds per cubic foot, is the reciprocal of the specific volume.

A set of *steam tables*, giving the numerical values of the various steam properties at various temperatures and pressures, is an essential tool to anyone making calculations dealing with steam. A temperature table and a pressure table for saturated steam will be given in Installment 31 of this series. Values used in the following examples are taken from these tables.

Example 1.

Problem.—For the generation of steam, a boiler is using water at the rate of 120 bbl. per day. The temperature of the feed water is 80° F. Dry saturated steam is produced at a pressure of 250 lb. per sq. in. gage. Atmospheric pressure is 14 lb. per sq. in.

How much heat must be transferred to the water in the boiler during 1 day of operation?

Solution.—From the steam tables (Table 2—Saturated Steam: Pressure Table, Installment 31) it is found that the total heat of the saturated vapor at an absolute pressure of 264 lb. per sq. in. is 1,202 B.t.u. per lb.

In the steam tables, 32° F. is used as a datum of zero heat content. Then, 1,202.0 B.t.u., as obtained from the table, represents the heat required to convert 1 lb. of water at 32° F. to dry saturated steam at 264 lb. per sq. in. abs. In this problem, however, the water was at 80° F. when it entered the boiler. Then, the amount of heat required to raise the temperature of 1 lb. of water from 32° F. to 80° F. must be subtracted from 1,202.0 to obtain the amount of heat actually added in the boiler to 1 lb. of water.

Referring to Table 1, Installment 31 (Saturated Steam: Temperature Table) of the steam tables, the heat of the liquid at 80° F. is found to be 48.02 B.t.u. per pound.

Let h = heat added in boiler, B.t.u. per pound.

$h = 1{,}202.0 - 48.02 = 1{,}153.98$ B.t.u. per pound.

Let w = weight of water generated into steam per day, pounds.

$w = 120 \times 42 \times 8.34 = 42{,}033.6$ lb. per day.

Then, the total heat transferred in the boiler would be equal to $1{,}153.98 \times 42{,}033.6$, or 48,505,934 B.t.u. per day.

Example 2.

Problem.—Given the factors of Example 1, except that instead of the steam produced being dry it is wet saturated steam with a quality of 94 per cent.

Calculate the amount of heat that must be transferred to the water per day.

Solution.—From Table 2 of the steam tables the heat of the liquid above 32° F. is found to be 381.24 B.t.u. per lb.

From Table 1 of the steam tables the heat of the feed water above 32° F. is 48.02 B.t.u. per lb.

So the heat of the liquid, h_f, is equal to, (381.24 — 48.02), or 333.22 B.t.u. per lb.

From Table 2 of the steam tables, the latent heat of vaporation, h_{fg}, is 820.7 B.t.u. per lb.

Then the total heat of the wet steam, h_s, can be calculated as follows,

$h_s = 333.22 + 0.94 \times 820.7 = 1{,}104.68$ B.t.u. per lb.

The amount of heat transferred per day would be $1{,}104.68 \times 42{,}033.6$, or 46,433,677 B.t.u.

Series prepared by Glenn M. Stearns, associate professor of petroleum engineering, University of Oklahoma

SERVICE

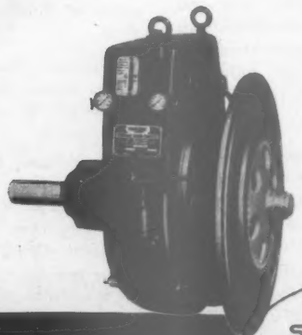
3 direct FACTORY BRANCHES

assure prompt service to Mid-Continent oil fields

1. PREVENTIVE MAINTENANCE—Now more than ever before, frequent inspection and necessary adjustments should be made to prevent costly failure and loss of valuable time later. Where excessive wear is evident parts should be replaced.

2. COMPLETE OVERHAULING, if needed, will be handled by competent men, in the minimum time. Call any one of the three branches listed.

3. PARTS AND SERVICE—Ample parts stocks and factory-trained men are available, at Tulsa, Dallas or St. Louis, to handle the service needs of any Twin Disc product in the mid-continent territory.



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CLUTCHES ARE HYDRAULIC DRIVES
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TWIN DISC CLUTCH CO.

Racine, Wis.

Journalog

A FEATURE OF THE OIL AND GAS JOURNAL — No. 13

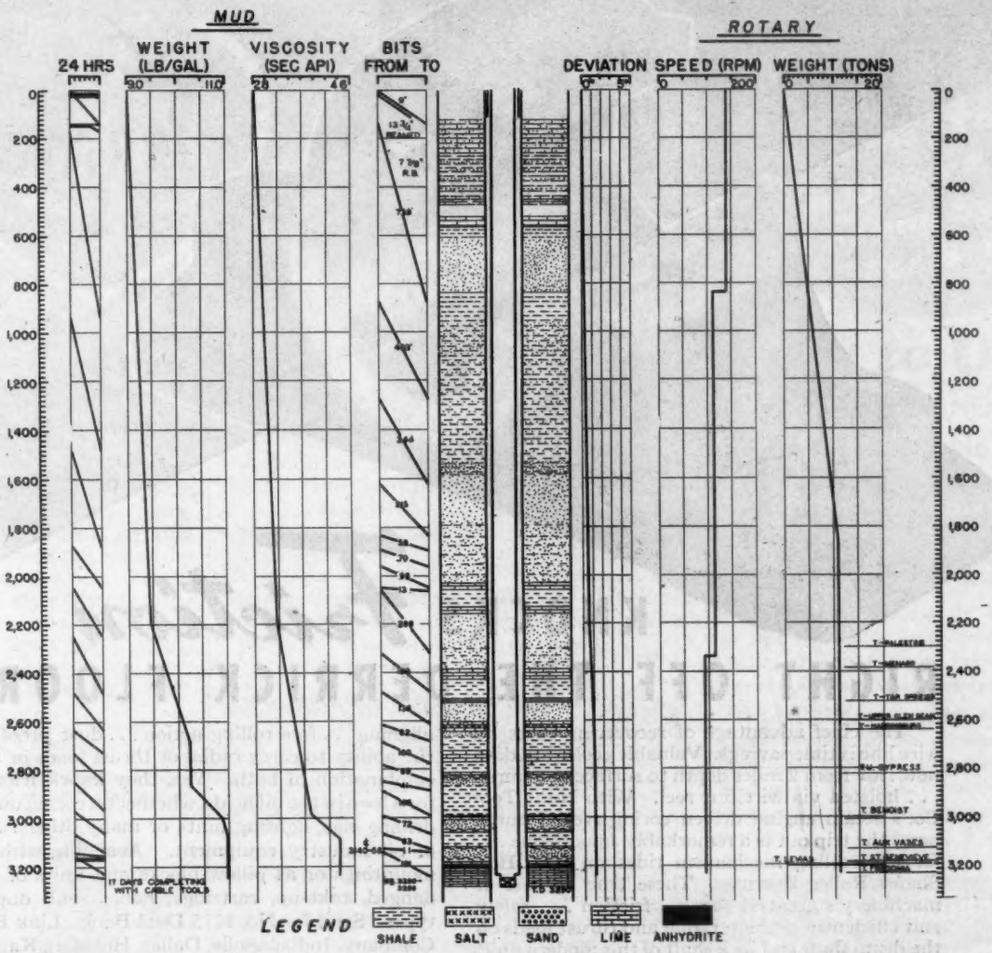
JULY 30, 1942

DEEP ROCK OIL CORP. 1 L. A. BLACKBURN

NW NE 30-1s-7e

ZEPHYR DRILLING CO.
CONTRACTOR

Discovery Well, Covington Pool, Wayne County, Illinois



DRILLING DATA

Elevation (derrick floor)	448 ft.
Note: All measurements from top of rotary bushing 4.4 ft. above ground level.	
Total depth rotary	3,241 ft.
Cored	3,140-55 ft.
Date started	5- 8-1942
Set pipe rotary	6- 2-1942
Completed cable tools	6-22-1942
Total time rotary	24¾ days
Rigging up, repairing and painting	4
Waiting on orders	1 2/3
Waiting on cement	1½
Oiling and greasing rig, repairs and jettings pits	5½
Slope tests	¼
Fishing	1/3
Trips	2
Coring, reaming and circulating	¼
Laying down drill pipe and running casing	½
Drilling time (net)	8¾
Tearing down rig	1

BIT RECORD

Size (in.)	Type—	No.
9	Rock bit	1
13¾	Reaming	1
7⅞	Rock	20
6¼	Core head	1

CASING RECORD

Size (in.)	Weight	Depth (ft.)	Cement (sacks)
10¾	7-gage	116	75
5½	14-lb.	3,255	125

MUD USED

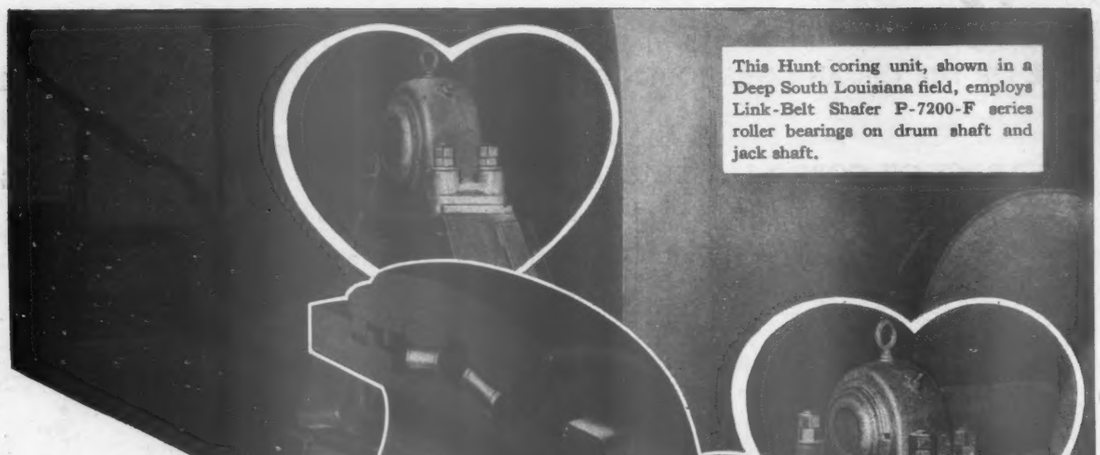
Aquagel	11 sacks

CABLE-TOOL COMPLETION

Date started	6-5-42
Total days	17
Rigging up	2 2/3
Swabbing and bailing	2 2/3
Testing	5 2/3
Drilling	2 2/3
Plugging back	2 1/3
Production test	1

Plugged back 3,290 ft. to 3,255 ft. with gravel and 100 lb. lead wool.

Production test	6-22-1942
Producing zone	3,238-49 ft.
Flowed	50 bbl. per hr.



This Hunt coring unit, shown in a Deep South Louisiana field, employs Link-Belt Shafer P-7200-F series roller bearings on drum shaft and jack shaft.

KNOCKS *Friction* RIGHT OFF THE DERRICK FLOOR!

The chief advantage of recovering cores by wire line is time savings. Valuable geological data now ride from 2 miles depth to surface in a hurry . . . hoisted via wire line reel. With Hunt Tool Co.'s steam engine driven coring reel pictured here, the trip out is a remarkably smooth one . . . for the reeling mechanism rides on Link-Belt Shafer Roller Bearings. These true fighters of machinery's greatest foe . . . friction . . . safely and efficiently cushion radial and thrust loads on the drum shaft and jack shaft of this modern unit. They are inherently suited for the speed and rough going this type of work demands . . . self-aligning . . . free rolling action . . . dust proof . . . the ability to carry radial or thrust loads or any combination of both. Yes, they knock friction for a loop in the oil fields, whether on coring units, drilling rigs, lighting units or many other types of oil industry equipment. Available without mountings or as pillow blocks and units of the flanged, take-up, cartridge, hanger and duplex types. Send for No. 1775 Data Book. Link-Belt Company, Indianapolis, Dallas, Houston, Kansas City, Mo., Los Angeles, New York, Toronto. Distributors in all fields.

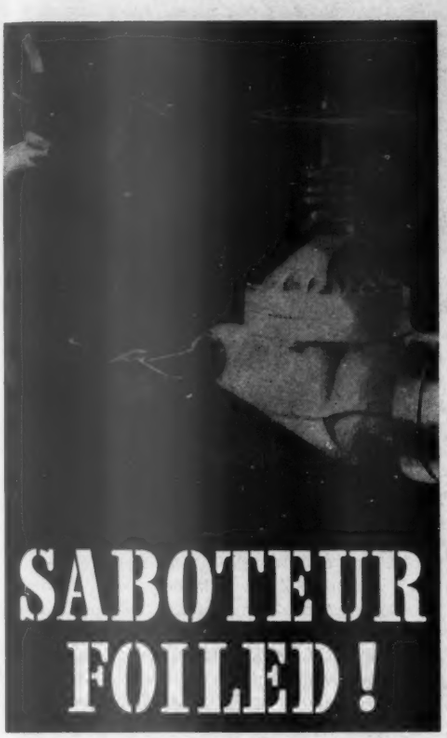
8827-A

LINK-BELT

FRICTION FIGHTER

BEARINGS

Roller and Ball Types



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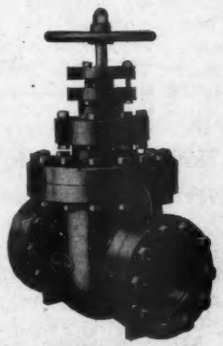
There's an invisible saboteur at work, in oil fields, pipe lines and refineries—the destructive force of rust, scale and corrosion that cripples your valves and other metal equipment!

Ludlow Valves are made of the best materials—built to stand up under long years of service. That's why Ludlow Valves installed years ago are able to meet the tough requirements imposed by today's peak loads, *without time out for repairs!* Employing the famous double-disc, parallel seat principle, developed and perfected by Ludlow, these rugged valves work smoothly, close securely—even after years in the open position. In peace or war, *Ludlow means value in valves.* Send for Catalog.

THE LUDLOW VALVE MFG. CO., INC.
TROY, N. Y.

Construction Features: Self-releasing 30° angle wedges and free-floating gates, self-adjusting to seats, afford smooth, trouble-free performance, long service. Rings are cleaned throughout stroke action. Gates are wedge-locked directly opposite ports and completely unwedged before raising. Ample tolerances provide easy action. Simple construction permits easy replacement of parts.



LUDLOW VALVES

SINCE 1866

Formula for Peak Polished-Rod Load

Attention is called to a typographical error in the article, "Calculation of Load and Stroke in Oil-Well Pump Rods," by B. F. Langer and E. H. Lamberger, in the July 2 issue, Page 27.

The formula for peak polished rod load should be

$$PPRL = (W_R + W_O)\ [1 + \frac{SN}{5{,}400}] \text{ instead of}$$

$$PPRL = (W_R + W_O)\ [\frac{1 + SN}{5{,}400}] \text{ as shown.}$$

●

Recording Charts May Be Switched to Save Paper

BY using charts that have been previously used on instruments to record temperatures and pressures wherever possible, the refining and natural-gasoline branches of the industry can do their bit toward contributing substantially to national defense.

In making the survey at one plant it was found that 62.5 per cent of the charts used daily could be reused on other instruments and without sacrificing the clear legible records of temperatures and pressures in either instance. In many cases the change onto another instrument did not even call for use of another color ink because the two ranges of recorded temperatures and pressures were so far apart. In other cases, the reuse of the charts called for contrasting inks in order that a legibile record be obtained in each case.

In the reuse of flow-meter charts it was found some could be used as many as four times. The second time a different color is used for the record. However, it was decided to try using them a third time and this was accomplished by resizing the orifice plate so that the range of the original meter on which the charts were used would be substantially changed. This third use was so satisfactory that a fourth run was made by resizing the orifice plate and consequently reranging the second meter on which the charts had run. It was found that the charts were sufficiently legible even after four times on to form a permanent record should that be essential.

Inspection of Welding

The American Welding Society has recently approved and published a committee report, entitled "Recommended Practices for Inspection of Fusion Welding." A considerable part of the report deals with the welding characteristics of both ferrous and nonferrous metals. These sections describe the principal types of defects that may be encountered, indicate their usual causes, and state how they may be detected and remedied. While most of the report deals with the inspection of welds in ferrous material, there is a considerable discussion of the nonferrous metals, including copper and copper alloys, aluminum and aluminum alloys, and nickel and nickel alloys.

This report is published by the American Welding Society, 33 West Thirty-ninth Street, New York City, in the form of a 23-page bulletin with a heavy paper cover.

Safety Tip

Protectors used on drill pipe and casing should be checked for tightness immediately after loading on a truck. This will prevent their becoming loose due to vibration, backing off and falling on the highway. A 5-in. steel protector dropping from a truck could easily bounce into the car following the truck, or worse, a car going in the opposite direction.

Save tear-down jobs and labor cost

Rust-Proof Your Well Machinery & Engine Cooling Systems For A Year

Easy to Use...

NO MUSS—NO FUSS
"Just Pour—No More"

If your well is idle, the cooling system on motors and engines rusts faster than normally. So rust-proof your cooling system at all times . . . it eliminates tear-down job, also eliminates tying up of equipment when it is needed.

Excellent for removing scale caused from lime gyp and hard waters from radiators on pumping engines, drilling engines, truck and tractor engines and well servicing unit engines.

RUST MASTER has been tried and proved in the automotive field for many years—sold and used by national fleet operators such as Greyhound Lines, many Yellow Cab corporations, oil companies, public utilities and other national fleet operators.

Proof? Here it is ↓

GULF SUPT.-Kilgore, Texas says:

We found that when we first started using Rust Master in pint cans that it saved us 80% on our total repairs on our stationary motors in the East Texas field, so then in order to have it on hand we purchased it in drum lots
It saved us tear-down jobs and increased the efficiency of our motors during the last three years. I will be glad to recommend Rust Master after many years of trouble and wide experience with all kinds of motors

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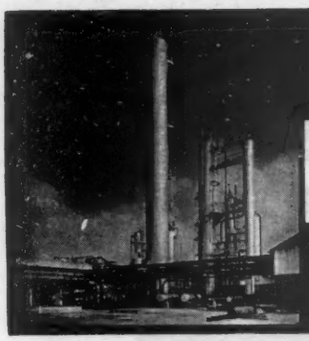
Use Six Master for cleaning out gum and carbon-sludge from inside of motor and Leak Master for eliminating leaks in radiator systems.

Ask Your Jobber or Supplier

Rust Master Chemical Corporation
712 BEACON STREET, BOSTON, MASS.
THE SILENT PARTNERS OF MOTOR EFFICIENCY



REFINERY ACTIVITY AND EXPANSION

Phillips' Contract for 45,000-Ton Rubber Plant In Southwest Has Not Been Cancelled

BARTLESVILLE, Okla. — Contract for design, construction and operation of a butadiene plant by Phillips Petroleum Co., has not been cancelled, Frank Phillips, chairman of the board, declared here last week, refuting a statement made on the floor of the Senate at Washington and published in the Congressional Record.

Mr. Phillips issued the following statement:

"The affairs of this company and its connection with the synthetic-rubber program have been widely publicized during the last few weeks in the public press and in the Congressional Record. Unfortunately, many erroneous statements have been made; consequently, in fairness to the company I feel compelled to issue a statement solely for the purpose of correcting these statements.

"The erroneous statement has been made that the War Production Board has cancelled a contract with Phillips Petroleum Co. to design, construct and operate a plant for the Government to manufacture butadiene, a product used in the manufacture of synthetic rubber, because of the excess amount of material required.

"This company has a contract with Defense Plant Corp. and Rubber Reserve Co. to design, construct, and operate a plant for the manufacture of 45,000 tons of butadiene per year. The WPB has issued the highest preference rating for the procurement of necessary material. The contract has not been cancelled by Defense Plant Corp. nor has the priority rating been cancelled by the WPB.

"The Rubber Reserve Co. has asked that we withhold further purchases and give consideration to every possible means of reducing the amount of critical metals required for our project. It also asked that we investigate the Houdry process. These requests have been complied with.

"Many conflicting statements have been made quoting the amount of new critical material required to construct our plant. According to the Congressional Record of July 21, 1942, our material requirements were quoted as being 113,000 tons. An accurate material list could not be filed until design of the plant had been completed and it was not filed with Defense Plant Corp. until July 12, 1942.

"The latest estimated requirement of new metals necessary to construct the butadiene plant alone is 11,159 tons. Utilities and service facilities to supply the plant require 2,306 tons or a total of 13,465 tons of new critical metals. This material requirement compares favorably with other butadiene projects.

"The statement has been made that no petroleum company has yet perfected a process for the manufacture of synthetic rubber from petroleum. Phillips Petroleum Co. has been manufacturing butadiene for 2 years. Its process patents are 100 per cent American and have long since passed the experimental stage. During the past 2 years, Phillips Petroleum Co. has been actually making synthetic rubber through the operation of the Hycar Chemical Co., which is jointly owned by Phillips and the B. F. Goodrich Co. These plants are privately owned, they do not belong to the Government. The capacity of this rubber plant is in excess of 8,000 tons per year. Automobile tires made from this plant's production of synthetic rubber are now on the highways.

"A large portion of the affiliate company's production of synthetic rubber is now being used in the manufacture of leakproof gasoline tanks for military aircraft.

"Shortly after the Japanese raid on Pearl Harbor, Defense Plant Corp. and Rubber Reserve Co. asked officials of Phillips Petroleum Co. to come to Washington to discuss a synthetic-rubber program. Even before a contract was signed the Phillips Petroleum Co., as directed, immediately started the design and construction of a butadiene plant.

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National Refining to Build Aviation-Gasoline Plant

COFFEYVILLE, Kans.—A new aviation-gasoline plant is to be construction here at the refinery of National Refining Co. Announcement of the project was made last week in Cleveland, Ohio, where National Refining maintains headquarters.

The new project is financed by the Defense Plant Corp., a subsidiary of Reconstruction Finance Corp.

Arthur G. McKee & Co., Cleveland, will supervise design and construction of the new plant. Completion of the unit is scheduled about June 1, 1943, and construction will be started about October 1.

National Refining Co.'s Coffeyville plant has crude capacity of 9,500 bbl. daily and the cracking facilities are rated at 2,500 bbl. per day.

Sketches of Plant Operators . . .

J. J. ALLINSON, vice president in charge of manufacturing for Lion Oil Refining Co., El Dorado, Ark., has shouldered new responsibilities. He has been made vice president in charge of Lion Chemical Corp., which will operate Ozark Ordnance Works upon completion of that project.

During his widely diversified career, Mr. Allinson has been in charge of manufacturing for several oil companies. His practical experience in petroleum technology includes a period in the twenties during which he was European manager for Arthur G. McKee Co., Cleveland, Ohio, engineering and refinery construction firm. He was also consulting engineer for several years on the staff of a large foreign oil company.

Mr. Allinson holds patents on various petroleum processes. He pioneered in development of modern refinery heat-exchange equipment and in desalting and dehydrating processes. He has also done much engineering work with flashing and evaporating equipment and with vapor-tight concrete storage reservoirs of 1,000,000 bbl. capacity and larger installations.

Preparations for his petroleum engineering career was made at Ellsworth College and Drake University in Iowa. Development of technical executives and petroleum engineers is one of the diversions from routine that receives much of Mr. Allinson's spare time. His hobbies, although they suffer from lack of time, are horseback riding and philosophy.

WHO'S WHO IN REFINING

Pan American Refining Corporation

ONE of the most modern refineries in the country is operated by Pan American Refining Corp. at Texas City, Tex., which with other manufacturing facilities owned directly by the corporation and affiliated companies completes a well-rounded unit in the industry.

Refining operations of Pan American are under the general direction of Dr. Robert E. Wilson, president, and under the specific supervision of D. J. Smith, vice president and general manager.

Pan American Refining Corp., domiciled at 122 East 42nd St., New York City, operates two refineries and an affiliated concern, Pan American Petroleum Corp., has another plant in Louisiana

SUMMARY OF OPERATIONS

Location—	Crude capacity (bbl. daily)	Cracking capacity (bbl. daily)
Texas City, Tex.	97,000	37,000
Baltimore, Md.	8,000	.....
Destrehan, La.*	7,500	.....
Total	112,500	37,000

*Operated by Pan American Petroleum Corp.

The Texas City operation consists of two duplicate combination units. Extensive auxiliary equipment has been installed since the main sections of the refinery were completed for recovery of the petroleum fractions that are now highly essential to prosecution of the war.

One of the earliest large-scale commercial applications of petroleum gases to the production of chemicals was started at Texas City where Carbon & Carbide Chemicals Co. erected a plant alongside the Pan American refinery.

Marketing operations of Pan American products are concentrated in the northern part of the Atlantic Coast. Normally, the marketing requirements are supplied with products from Texas City by tankers but in recent months there has been a substantial volume of material moved overland via railroad tank cars.

The Baltimore refinery is a straight distillation and asphalt operation which normally draws its charging stock from Texas terminals via tankers.

The affiliated Destrehan, La., plant produces chiefly fuels, road oil and asphalt, although a limited amount of lighter products are also recovered.

J. Sweeney is superintendent of the Texas City refinery assisted by H. J. Broderson. S. B. Schapiro is chief engineer and R. H. Price is chief chemist.

W. W. Hulin is superintendent of the Baltimore plant. W. F. Mellendick is assistant superintendent and A. L. Moore is chief engineer.

The Destrehan plant is under supervision of F. W. Grey and L. L. Robein is assistant.

●

To Make Aviation Gasoline

CALGARY, Alta.—Official approval has been given to plans of British-American Oil Co. to convert part of its existing refining equipment at Moose Jaw, Sask., to the manufacture of aviation gasoline. The project will involve expenditure of approximately $250,000 and construction will start as soon as some necessary equipment from the United States is available.

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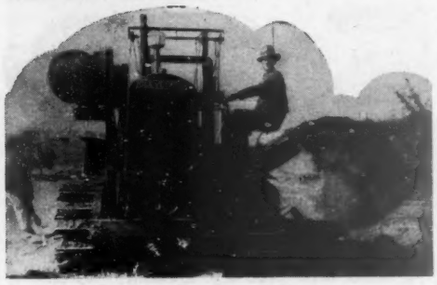

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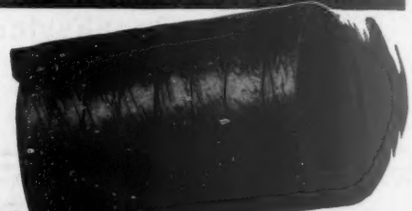

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Pipe-Line Activity

Pipe Shipments Arriving Regularly Along War Emergency Pipelines' Right-of-Way

LITTLE ROCK, Ark.—Shipments of 24-in. pipe for War Emergency Pipelines, Inc.'s 550-mile system from Longview, Tex., to Norris City, Ill., are being delivered at various points along the right-of-way at the rate of 40 to 50 cars daily. Approximately 300 car loads of the 24-in. pipe have been delivered.

Meanwhile, the War Emergency Pipelines' organization here is being perfected and all preparations have been completed for the start of construction. Contracts for building the line were awarded 2 weeks ago to seven construction companies. Pipe used in the line weighs 92.69 lb. per foot and the total tonnage of 137,500 tons will be manufactured in the Lorrain, Ohio, plant of National Tube Co.

The 24-in. portion of the line will terminate at the B. & O. and New York Central intersection at Norris City, Ill., and will originate near Longview, Tex. Short delivery lines to tank-car loading racks at the B. & O. and New York Central tracks at Norris City, a 14-in. lateral to loading racks on the C. & E. I. and L. & N. railroads and a barge loading terminal on the Ohio River at Mount Vernon, Ind., will distribute crude on the northern terminal to other facilities for eastern movement.

The War Emergency Pipelines' personnel at Little Rock, Ark., where offices have been established in the Rector Building, includes:

B. E. Hull, vice president and general manager, president of the Texas Pipe Line Co.

Maj. A. N. Horne, general superintendent and former manager of Empire Pipe Line Co., Bartlesville, Okla. He has been released from duties in the Army for the pipe-line assignment.

Brady Cole, Houston, Tex., a member of the law firm of Baker, Botts, Andrews and Wharton, is serving as associate general counsel for the pipeline company.

J. W. Cason, Shreveport, La., formerly with Standard Oil Co. of Louisiana, is serving as treasurer and comptroller.

Harry J. Lingle, Houston, Tex., Humble Pipe Line Co., is serving as purchasing agent.

Oscar Wolfe, Houston, Tex., Texas Co., is chief engineer of lines.

L. M. Goldsmith, Philadelphia, Pa., Atlantic Refining Co., is chief engineer of pump stations and terminals.

R. E. Harrell, formerly right-of-way and claims agent for Plantation Pipe Line Co., is chief of the same phase of operations for War Emergency Pipelines.

Kenneth A. Owen, Houston, Tex., formerly with Texas Pipe Line Co., is assistant to Mr. Hull, the vice president.

E. Carey Lind, formerly in the freight traffic department of Missouri Pacific Railroad at Little Rock, is freight traffic manager.

O. R. Burden, Wichita Falls, Tex., is division superintendent.

Charles P. Cathers, Washington, D. C., supervising engineer for Defense Plant Corp.

Detailed plans for the 10 pump stations and feeder lines at the Longview, Tex., intake end of the line and terminals at Norris City and Mount Vernon are under preparation. Machinery has not been purchased and construction contracts will not be awarded until some time in August. The only officers of War Emergency Pipelines, Inc., outside of the Little Rock, Ark., staff, are W. Alton Jones, president, who is also president of Cities Service Co., New York, and Charles I. Thompson, Philadelphia, Pa., general counsel and secretary of the new company.

The contract between Defense Plant Corp. and War Emergency Pipelines, Inc., provides that the latter organization is to administer and supervise construction for the federal agency without management fee or profit whatsoever. Before completion of the project, War Emergency Pipelines agrees to enter into an arrangement to operate the line without profit.

Later, the line may be extended from Norris City, Ill., to Philadelphia and Bayonne, N. J.

●

Removal of Ranger-Panhandle Pipe Line Progressing Rapidly

RANGER, Tex.—After 10 days of rough digging through the hill country north of Ranger, the 65-man "takeup" crew, now ripping up the 14-year-old pipe line between here and the Texas Panhandle moved into level country last week as similar work started on the northern end of the line. The line being removed is that of the Magnolia Pipe Line Co. and Gulf Oil Corp.

On the northern end, line removal work has started near the town of Panhandle, Tex., by Williams Brothers Corp. Forty-five miles of this reclaimed pipe will be used for looping a line of Magnolia Pipe Line Co. between West Ranch and Beaumont, Tex.; 15 or 20 miles will be used to fill out the requirements of the Project 5 system; and the balance will go to the Bayou Pipe Line System.

Williams Brothers has a contract for laying loops on the Magnolia line to Beaumont, Tex.

Companies in the Bayou Pipe Line project are: Shell Pipe Line Co., which will be the operator; Humble Pipe Line Co., Pan American Pipe Line Co., Pure Oil Co., Crown Central and Texas Pipe Line Co.

Eddie Peters, superintendent of the takeup crew, said that his men and machines are over the hump of initial difficulties and are hitting a scheduled pace of better than 1 mile a day of

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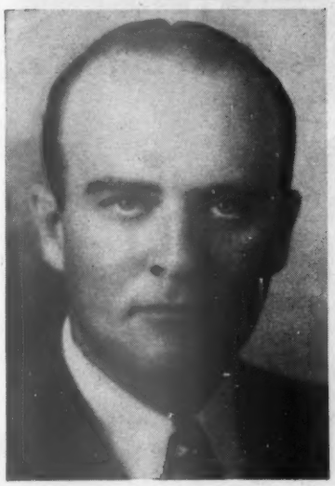
Pipe-Line Personalities . . George A. Peterkin



GEORGE A. PETERKIN, vice president of Latex Construction Co., was born at Mer Rouge, La. After graduating from high school at Bastrop, La., he entered Georgia Institute of Technology where he studied mechanical engineering for a year. The following year he transferred to Louisiana State University where he completed his engineering course in 1924. After graduation, he joined the organization of the Louisiana State Highway Department as construction engineer and had an active part in the building of highways in various parts of Louisiana. In this work he derived experience in construction operations which was of value in later undertakings.

In 1926 he resigned from the highway department and started with the Williams Brothers organization as timekeeper assigned to the laying of a 22-in. gas line from the Monroe field, Louisiana, to Baton Rouge, La., for Interstate Natural Gas Co. After this he was promoted to the position of superintendent of construction in charge of the projects contracted by the company.

Later Mr. Peterkin was elected vice president of Williams Brothers, Inc., and he operated from company headquarters at Tulsa. He continued in this position until 1936 when he resigned for the purpose of organizing Latex Construction Co., with Lawrence H. Favrot. He is particularly concerned with the field operations of the company and has had an active part in improving methods for carrying on construction work in the swampy country of the Gulf Coast. His company carries on construction work over a large part of the pipe-line area of the country.

Mr. Peterkin is married and has two children. He gets in an occasional game of golf when he manages to take time off from pipe lining.

pipe recovered, cut, beveled, cleaned, straightened and shipped. He expects the job to be finished on the first 55-mile section of line in another 20 to 30 days.

Takeup work has been complicated by the fact that this line was laid originally much deeper than is customary practice. The unusually deep trench was an engineer's experiment to put the line beneath the ground frost level and thereby avoid the slowing down effect of low temperature on crude-oil flow during the winter months. The experiment was a success for the engineers but an extra headache today for the crew attempting to speed up this segment of pipe-line project No. 5, designed to facilitate deliveries of Texas oil to the eastern seaboard.

Pipe already dug and given its initial processing preparatory to its relaying has been moving daily from Ranger to a new right-of-way in South Texas. Pipe now being reclaimed on the Panhandle end of this line will start moving within the next few days to El Dorado, for relaying on an established right-of-way between there and Helena, Ark. It will carry products to northern terminals for transshipment by river, rail, and existing pipeline facilities to the eastern states.

Digging up of the pipe, for relocation, is a part of the pipe-line program which the oil industry is undertaking at the request of the Office of Petroleum Coordinator for War.

Construction Starts for Looping Gulf Pipe Line System

Work began last week for looping the system of Gulf Refining Co. between Lufkin, Tex., and Dubberly, La. The project calls for laying 125 miles of 6-in. and 8-in. in eight loops. When the undertaking is completed, Gulf will have a continuous 8-in. and a continuous 6-in. line between the points mentioned. Part of the pipe for the project will be 54 miles of 8-in. taken from the Gulf's Luling-Port Arthur, Tex., line in a section between the Brazos River and Dyersdale, Tex. Construction is being handled by Latex Construction Co. The looping of the Lufkin-Dubberly section will contribute to the effectiveness of the Project 5 system.

Sinclair to Connect New Montague County, Texas, Field

Right-of-way is being surveyed in Montague County, Texas, for Sinclair Refining Co. pipe line division's 17-mile, 4-in. line which will tie in the Forestburg field with the Sinclair trunk near Bowie. The Forestburg field was discovered recently by Sinclair Prairie Oil Co. and now contains one producer and three drilling wells. Reclaimed pipe is being used in construction of the gathering artery.

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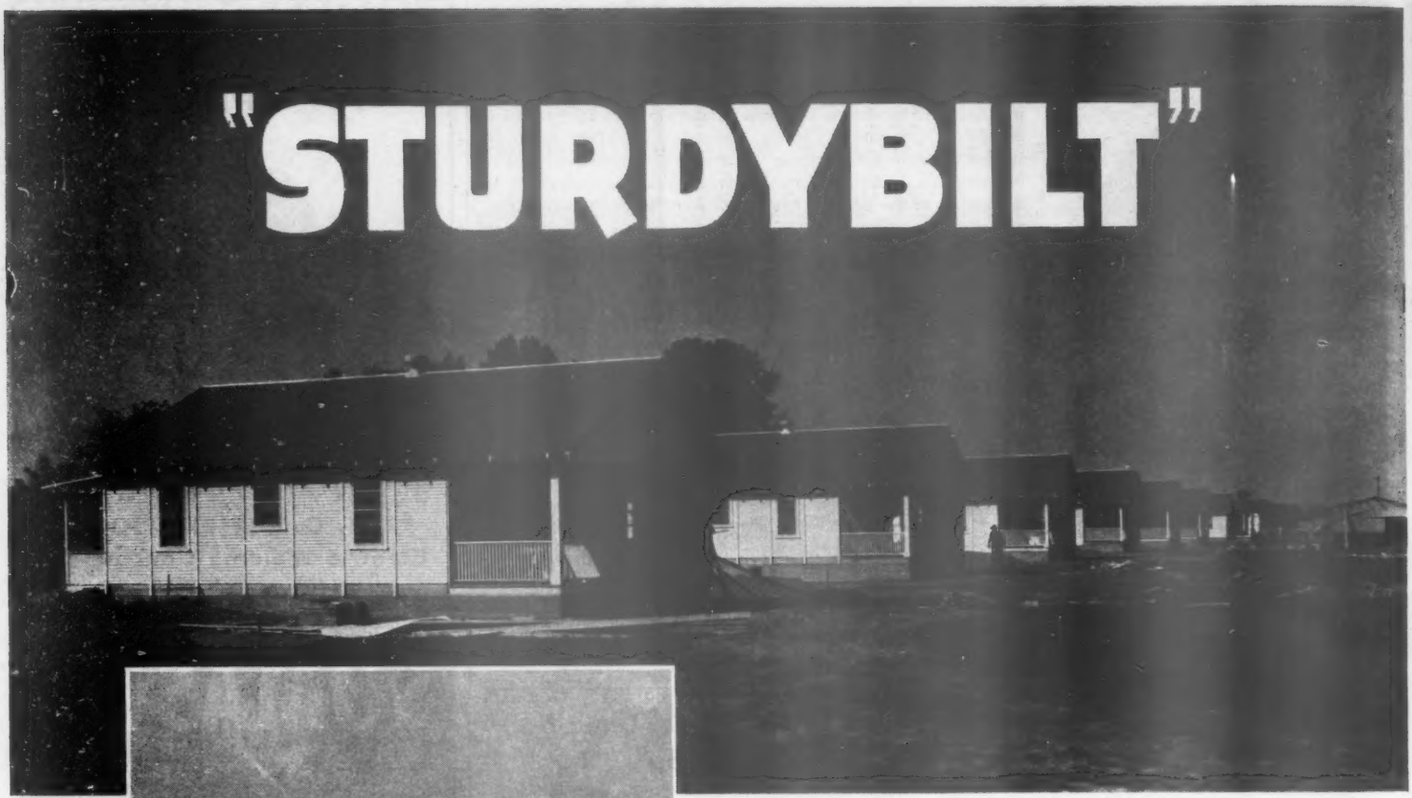

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FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

The resolution of the Petroleum Industry War Council published elsewhere in this issue calling for a reduction in restrictions on drilling will meet with hearty support from every operator who desires to remain in business. In recent years, the discovery rate has increased but the fields found have tended to become increasingly smaller. Most discoveries might be considered to result from gleaning operations in old producing districts where the larger fields had previously been found.

The review of drilling and of discoveries covered by the semiannual section of this issue shows the extent to which drilling has fallen off and, at the same time, the interesting nature of the discoveries made during the past 6 months. Whether some of these discoveries will become major fields cannot be forecast because few of them are being drilled up. In previous years, the extension of Ellenburger production into Andrews and Ward counties in West Texas would have been the signal for a real drilling boom. In East Texas, the Paluxy discovery at Black Oak has resulted in considerable activity and Midway has been drilled up with little deviation from normal speed, but these are exceptional fields under the program established this year.

The purpose of exploratory drilling, which is being encouraged by OPC is, naturally, to find new fields. But as has previously been pointed out on this page, a discovery well develops little in the way of new reserves. A systematic drilling campaign on sound engineering principles must follow the discovery, otherwise its potentialities cannot be ascertained. Many good wells have been completed in virgin territory, only to have the surrounding wells come in as small producers. Sometimes a good producer heralds the advent of a one-well pool but unless additional drilling is done, this fact cannot be ascertained.

Having developed production with no facilities for getting the oil to the refinery is uneconomic but no more so than to develop transportation facilities in advance of definite knowledge of the size of the facilities that will be required. Under present conditions, many of the discoveries are in areas with too great potential production but others are in states near the markets. If the industry is not going to be compelled to continue to juggle its transportation system throughout the war period and hope that it fits postwar conditions, it might be a good idea to permit those states near the markets which are on the decline to drill enough wells, even on 10-acre spacing, to maintain production at least at the levels prevailing at the beginning of the year.

With Illinois and Mississippi declining at a rapid rate, Kansas, Arkansas and Louisiana may be called on to supply more oil than they can provide without a large increase in drilling. Otherwise unsound production practices may be imposed on states which up to now have operated on sound principles.

ILLINOIS: The largest Trenton well ever completed in Illinois is in the St. Jacob field, Madison County. It is expected to spur exploration to the north and west. Jeff has been extended 1 mile east and a Benoist pool has been opened 2 miles west of St. James, Fayette County (p. 192).

WEST TEXAS: The Chancellor field near Fort Stockton in Pecos County has a second well which proved better than the discovery and also opened up a new pay for the district, a limestone in the lower Castile just above the Delaware which was the pay in the discovery. A test midway between Sand Hills and Abell reports the top of the Ellenburger some 500 ft. high (p. 187).

LOUISIANA GULF COAST: First production is reported on the north flank of the Anse La Butte dome. Marginulina production has been opened at West Mermentau 1,000 ft. below the regular pay (p. 193).

EAST TEXAS: Possible Rodessa or Pettit sand production is reported from a deep test near Larissa, northwestern Cherokee County. Club Lake is proving of limited extent but two producers and five new locations have been added to the Black Oak, Paluxy sand pool (p. 184).

MICHIGAN: Operators are considering the possibilities of dual completions in such fields as Reed City where Traverse and Monroe pays overlap. A wildcat in Wright Township, Ottawa County, made 65 bbl. on the pump from shallow pay. Oil is also reported in a Clare County wildcat south of the Headquarters field (p. 196).

KANSAS: Wilkins and Hall-Gurney are each extended ½ mile south. Wilcox production has been found in the Lindsborg pool, McPherson County. It may, however, be small (p. 182).

CALIFORNIA: An extensive reconditioning and shallow drilling campaign is getting under way with a view to increasing heavy-oil supplies (p. 190).

ALBERTA: A test on the Bruderheim structure northeast of Edmonton is reported running higher than anticipated and is showing oil in two horizons and gas in a third (p. 195).

TEXAS GULF COAST: A new field is reported southeast of Ganado, Jackson County. Four tests have started as a result (p. 191).

WEST VIRGINIA: Gas has been found in the Newburg horizon of the Lockport (Silurian) dolomite in a Boone County test (p. 195).

SOUTHWEST TEXAS: Stratton and Seeligson have again been extended (p. 183).

OKLAHOMA: The Hunton discovery at Romulus improved considerably after acidization. Viola production was extended ½ mile east at Hotulke and Layton sand production in the old Tonkawa field was extended 2 miles east (p. 189).

COMPLETIONS IN ALL FIELDS . . .

(Week Ended July 25, 1942)

	Oil	Gas	Dry	Total	Footage	Ttl. comp. to date 1942	Ttl. comp. to date 1941
N. Y., Pa., and W. Va.	41	15	5	61	139,762	2,052	3,300
Ohio	5	10	8	23	52,218	592	910
Indiana	4	0	1	5	9,127	204	281
Kentucky	0	4	0	4	9,502	185	355
Illinois	24	0	19	43	111,186	969	1,824
Michigan	7	3	9	19	41,280	406	474
Kansas	15	1	16	32	99,006	876	1,181
Nebraska	0	0	1	1	2,705	23	55
Missouri, Iowa	0	0	0	0	0	9	21
Oklahoma	12	3	6	21	70,565	738	1,012
Texas:							
North Central Texas	5	0	15	20	63,883	699	1,567
West Texas	21	0	3	24	100,187	889	1,185
Texas Panhandle	3	0	1	4	12,561	241	322
East Texas	6	2	4	12	52,148	235	619
Texas Gulf Coast	9	0	10	19	130,922	460	599
Southwest Texas	4	1	8	13	72,379	719	1,019
Total Texas	48	3	41	92	432,080	3,243	5,311
North Louisiana	2	0	3	5	26,678	280	369
Louisiana Gulf Coast	6	1	5	12	92,013	320	500
Total Louisiana	8	1	8	17	118,691	600	869
Arkansas	1	0	2	3	13,734	87	103
Mississippi and Southeast	0	0	0	0	0	45	139
Montana	2	0	0	2	5,920	93	149
Wyoming	2	0	0	2	4,719	55	100
Colorado, Utah	0	0	0	0	0	9	22
New Mexico	2	1	0	3	9,096	162	168
California	13	0	1	14	55,912	441	628
Total United States	184	41	117	342	1,175,503	10,789	16,902
Total previous week	170	39	96	305			
Week ended July 26, 1941	443	55	149	647			

Wilkins Pool Extended One Mile South

By CARL HOOT

ALTHOUGH completions showed a drop for the week in Kansas, drilling is at a near-normal pace and several pools reported extensions. In Ellsworth County Mid-Plains Oil Co.'s wildcat, 1 Alden, N½ NE SE 32-17-9w, extended Arbuckle production 1 mile south of the Wilkins pool. Finding Lansing lime at 2,884 ft. and Arbuckle at 3,218 ft., it swabbed 100 bbl. of oil in 2½ hours, 1,500 ft. off bottom. After acid treatment it was given state potential of 3,000 bbl. It has been recommended that the new well be given the name Southeast Wilkins.

In Russell County the Hall-Gurney pool was given a ½-mile extension south when R. B. Snyder 1 Shaffer, NE NE 3-15-13w, pumped 591 bbl. of oil a day from Lansing at 2,970-98 ft. In Reno County the Peace Creek pool, south of the Hendrickson area, had three completed wells, extending the field north and east.

Second Pay Zone Indicated at Lindsborg

The Lindsborg Viola lime pool of McPherson County had another producing horizon in sight last week when Auto Ordnance Corp. 1 Johnson, CWL SW NE 8-17-3w, found a show of oil in Wilcox sand at 3,450 ft. Present production in the field is from Viola lime at an average depth of 3,360 ft. Operators last week had set pipe at 3,450 ft. and were making ready for production tests. Location is on the northern outskirts of the city of Lindsborg and will be a ½-mile east extension to the Lindsborg field.

Other completions of interest last week were two 800-bbl. wells in the Ray pool of Phillips County, both belonging to Cities Service Oil Co. and in the Smyres pool of Rice County, Continental Oil Co. finished two 500-bbl. wells, producing from Mississippi lime.

KANSAS COMPLETIONS

Wildcats

Ellsworth County: Mid-Plains Oil 1 Alden, N½ NE SE 32-17-9w, Lansing 2,884 ft., Arbuckle 3,218 ft., swabbed 100 bbl. in 2½ hr., 1,500 ft. off bottom, acid, initial 3,000 bbl., T.D. 3,233 ft.

Reno County: Simpson Oil 1 Speaker, NE SE NE 10-24-10w, dry, T.D. 3,889 ft., Lansing 3,335 ft., Mississippi lime 3,704 ft., Viola 3,874 ft.

Rice County: Cities Service 1 Wolf, SE SE NE 6-21-6w, dry, T.D. 3,532 ft., Mississippi lime 3,476-3,529 ft., drill-stem test 3,470-81 ft., recovered mud, show of oil and gas.

Rice County: Westgate-Greenland 1 Appel, NE NE NW 3-19-6w,, dry, T.D. 3,437 ft., Lansing 2,793 ft., conglomerate 3,335 ft., Mississippi lime 3,355-3,433 ft.

Rooks County: Churchill Oil 1 Griffin, NE NE 25-8-16w, dry 585 ft.

Stafford County: Fain Drlg. 1 Stroble, NE NE SW 9-22-14w, dry, T.D. 3,908 ft., Topeka 3,145 ft., Lansing 3,485 ft., base Kansas City 3,740 ft., conglomerate 3,801 ft., Viola 3,811 ft., Simpson 3,838 ft., Arbuckle 3,878 ft., show oil 3,881-83 ft., 3,898-3,900 ft.

Fields

Beaumont, Greenwood County: K. T. Weideman 2 Temple, SW SW NW 25-27-8, pumped 20 bbl., Mississippi lime, 2,487-2,518 ft.

Bemis South, Ellis County: Cities Service 1 Windholtz, NW NW SE 3-12-17w, dry, T.D. 3,670 ft.

Chase, Rice County: C. U. Bay 2 Marshall, NW NW 8-19-9w, pumped 45 bbl., Arbuckle 3,236-43 ft.

Auto Ordnance Corp. 1 Specht, N½ NW NW 3-20-9w, dry, T.D. 3,233 ft.

R. Olsen 3 Peterson, N½ NE NE 4-20-9w, dry, T.D. 3,246 ft.

Geuda Springs, Cowley County: Arthur Brewer 1 Auman, NE NE 5-34-3, dry, T.D. 3,250 ft.

Gorham, Russell County: Stanolind 2 Baier, E½ NW SE 35-13-15w, swabbed 18 bbl. an hr., Arbuckle 3,304-11 ft.

Hall-Gurney, Russell County: R. B. Snyder 1 Shaffer, NE NE 3-15-13w, pumped 591 bbl., Lansing 2,970-98 ft.

Helken, North, Ellsworth County: Appleman 2 Stratman, N½ SW NW 24-17-10w, dry, T.D. 3,271 ft.

Kraft-Prusa, Barton County: Anderson & Prichard 1 Sayfert, NE NE SE 21-16-11w, dry, T.D. 3,446 ft.

Vickers Petroleum 2-A Soeken, NE NW SE 21-17-11w, pumped 401 bbl., Arbuckle 3,246-56 ft.

Auto Ordnance Corp. 2-B Disque, NW SE NW 23-17-11w, dry, T.D. 3,351 ft.

Leesburgh, Stafford County: McPherson Drlg. 1 Mather, SE SE SW 1-25-13w, dry, T.D. 4,221 ft.

Lindsborg, McPherson County: Dickey Oil 1 Lander, W½ NE NW 19-17-3w, pumped 709 bbl., Viola 3,370-74 ft., acid.

Max, Stafford County: Stanolind 3 Helmers, W½ NE SW 1-22-12w, flowed 20 bbl. an hr., Arbuckle 3,568-76 ft.

McLouth, Jefferson County: Hatcher-Fisk 2 Edmonds, SE NW 21-9-20, 2,250,000 cu. ft. gas, sand 1,423-30 ft.

McLouth, Leavenworth County: McNerney 1 Williams, SW NW 12-10-20, dry, T.D. 1,474 ft., Mississippi lime 1,448 ft.

Peace Creek, Reno County: Transwestern Oil 1 Wisby, SW NE NE 36-22-10w, abandoned location.

Leader Oil 6 Tonn, SW NW SW 11-23-10w, pumped 18 bbl., Viola 3,771-3,810 ft., T.D. 3,954 ft.

Cities Service 2-B Heylmun, SW NW NW 12-23-10w, flowed 22 bbl. an hr., Viola 3,744-57 ft.

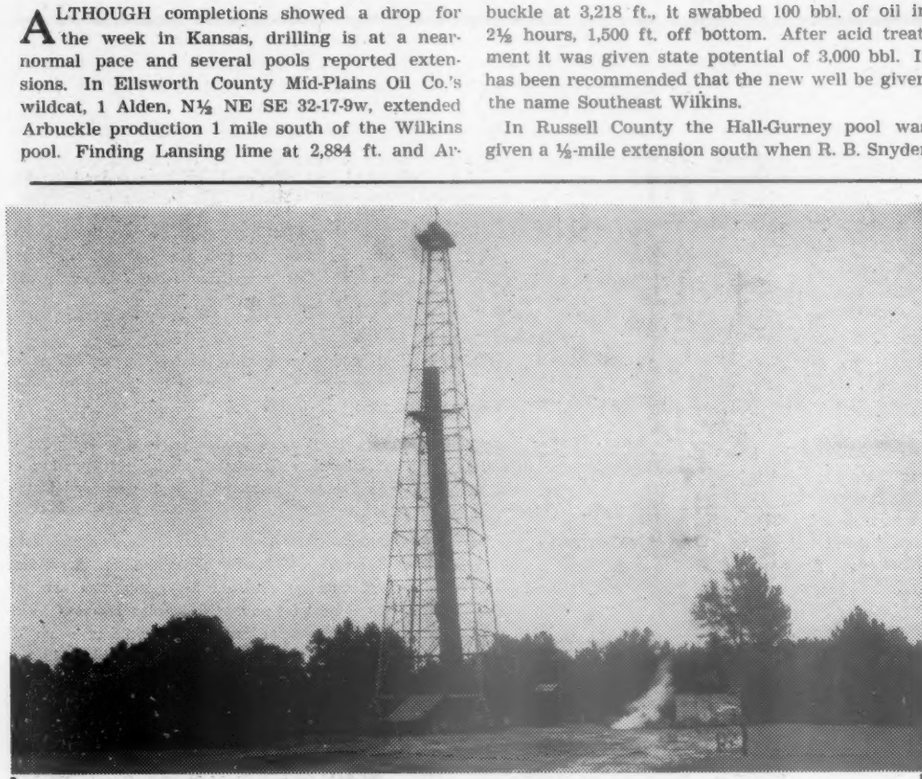
Cities Service 3 Sentney, SW NE 14-23-10w, flowed 27 bbl. an hr., Viola 3,755-62 ft.

Ray, Phillips County: Cities Service 2 Wallgren, SW NE SE 29-5-20w, 3,000 bbl., Lamotte sand 3,595-3,601 ft.

Cities Service 3 Solt, NE SW SW 31-5-20w, 877 bbl., granite wash 3,590-3,603 ft., T.D. 3,614 ft., Lansing 3,339 ft.

Severy, Greenwood County: Williams & Meredith 2 Baker, SE NE NW 8-28-11, dry, T.D. 1,260 ft.

Smyres, Rice County: Continental Oil 1 Carlson, NE SW NE 36-19-6w, pumped 509 bbls., Mississippi lime 3,362-3,404 ft.



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UNITED GAS PIPE LINE COMPANY

DEPENDABLE NATURAL GAS SERVICE DOESN'T JUST HAPPEN

Continental Oil 2 Carlson, NE NW NE 36-19-6w, pumped 468 bbl.. Mississippi lime 3,356-3,421 ft.
Virgil, Greenwood County: Aikman & Braden 2 Taylor, NE NW 15-24-12, dry, T.D. 1,790 ft.
Virgil, North, Greenwood County: D. M. Rhodes et al 6 Long, SE NE NE 17-23-13, dry, T.D. 1,808 ft.
Walter, Ellis County: Imo Oil & Gas 2 Gunther, E½ SE SW 35-11-18w, dry, T.D. 3,672 ft.

FOREST CITY BASIN

ST. JOSEPH, Mo.—Skelly Oil Co.'s Missouri wildcat 4 miles east of Oregon in E½ SE SE 32-60n-27w, Holt County, has passed the 3,000-ft. level and the well should be fairly near completion. No information has been released.

In Nebraska, however, the company announced that two of its wells were producing from the Viola limestone and that pumps would be installed. The wells are 1 Smith, E½ SE SE 3-1n-14e, and 1 Wiltse, E½ NW SE 10-1n-14e, both in the Dawson pool of Richardson County. As there were some water problems, neither is expected to be a large well. Power Oil Co. stated that its 1 Bohrer, also a Viola well, E½ SW NW 10-1n-14e, had an estimated potential of 72 bbl. per day.

Cellar and pits have been dug for Edwin S. Towle 1 Ethel Auxier in SE SE 4-1n-14e, in the Dawson pool. In the Shubert area, Cities Service Co. had a dry hole at 1 Morehead estate, SW NE 16-3n-16e, Richardson County. Total depth was 2,705 ft.

J. E. Palensky et al 1 N. A. Arnold, SE SE 26-3n-16e, Richardson County, was declared showing for a producer. This is a west offset to Skelly 1 Mack in the Barada pool and would be a northwest extension to the pool. Hunton was topped at 2,512 ft.

SOUTHWEST TEXAS

Resume Testing on De Witt County Wilcox Wildcat

By F. L. SINGLETON

CORPUS CHRISTI, Tex.—Tide Water Associated Oil Co. is preparing to resume testing of its 1 Gips, 3 miles south of Nordheim, De Witt County, with prospects of opening another Wilcox trend field. Following a series of production tests showing gas and distillate, casing perforations in sand at 8,336-44 ft. have been squeezed, and a succession of upper horizons in which showings were encountered will be tested. The large rig with which the hole was drilled to 8,500 ft. is being replaced with a lighter rig for this work.

A new Wilcox trend test of interest is being started by Continental Oil Co. on its Bruns lease, William Newman Survey, 7 miles southwest of Gonzales, Gonzales County, adjoining De Witt County to the north. A heavy rig has been moved in.

Magnolia 1 Buckner, wildcat 2 miles southwest of Berclair, Bee County, logged a sand showing oil at 10,087-90 ft.; sandy shale at 10,090-10,100 ft., and sand 10,100-44 ft. At 10,144 ft., the hole was losing returns and so far no tests have been made.

Rowe & McBride, Inc., have made location for a Vicksburg test 2 miles northwest of Skidmore, Bee County. It is on the W. W. Delony tract in the J. T. Malloy Survey. Stanolind has started a deep wildcat test on the Gould tract, W. C. Gill Survey, 7 miles northwest of Burnell. Two Bee County wildcats were quit during the week as dry. McBride 1 Kinkler, Bee County School Land Survey, 4 miles southeast of Clareville, was dry at 4,510 ft. Smith & Storey 1 McNeil, 8 miles northeast of Beeville, was dry at 4,131 ft.

Stratton and Seligson Extended

Production of the Stratton field, Nueces and Kleberg counties, continues to be extended with two more wells being completed the past week, both by Chicago Corp. on its Wardner Ranch lease, on the Kleberg County side of the line. Both were in the 6,500-ft. sand. Other producing completions in the district included a small extension of the Seeligson field, Jim Wells County, by Transwestern Oil Co.; another fair well by F. M. Boykin in the Midway ffield, San Patricio County, and a gas well by Smith & Mosser in the Wade City field, Jim Wells County.

SOUTHWEST TEXAS COMPLETIONS

LOWER GULF COAST DISTRICT

Wildcats

Bee County: McBride 1 Kinkler, dry, T.D. 4,510 ft. Smith & Storey 1 McNeill, dry, T.D. 4,131 ft
Jim Wells County: Rowe & McBride 1 Gerbet, dry, T.D. 5,428 ft.
San Patricio County: Humble 1 Kastner, dry, T.D. 6,520 ft.

Fields

East Plymouth, San Patricio County: Kirby 1 Jones. dry, T.D. 6,009 ft.
Midway, San Patricio County: Boykin 1 Boykin-Reed unit, 90 bbl., 3/32-in. choke, perf. casing 6,086-88 ft., T.D. 6,130 ft.
Richard King, Nueces County: Southern Minerals 29 King, dry, T.D. 5,615 ft.
Seeligson, Jim Wells County: Transwestern 14 Dunlap, 150 bbl., 3/32-in. choke, perf. casing 5,972-76 ft., T.D. 6,077 ft.
Stratton, Kleberg County: Chicago 29 Wardner, 129 bbl., ⅛-in. choke, perf. casing 6,574-78 ft., T.D. 6,600 ft.
Chicago 31 Wardner, 191 bbl., ⅛-in. choke, perf. casing 6,581-87 ft., T.D. 6,625 ft.
Wade City, Jim Wells County: Smith & Mosser 1 Diersing, 2,225,000 cu. ft. gas, ¼-in. choke, perf. casing 3,272-90 ft., T.D. 3,320 ft.

LAREDO DISTRICT

Wildcats

Hidalgo County: Seaboard 1 El Javalina, dry, T.D. 6,775 ft.

Fields

North Sun, Starr County: Sun 6 Garza, dry, T.D. 4,639 ft.

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Oil Show Reported in Cherokee County Wildcat

By ROBERT INGRAM

DALLAS, Tex.—Excitement prevailed in Dallas last week with reports that Humble Oil & Refining Co. had uncovered a new deep oil field at 1 H. F. Curtis, John Vaughan Survey 53, near Larissa in northwest Cherokee County. Details were not available.

However, at week's end, hole was being conditioned for a second attempt at a drill-stem test at total depth 10,185 ft. The first attempt was said to have failed, but no explanation was given. The well had been reported as probably in the Pettit section, but there was some doubt as to this. It might still have been in the basal Rodessa.

It was known that when the well reached 10,165 ft., it hit a soft spot and was cored 20 ft. to total depth, getting 3 ft. of hard, dense lime and 3½ ft. of soft, porous oolitic lime with good odor and possible stain. Because of the poor recovery, thickness of the porous section could not be determined, but it was believed to be 10 or 15 ft. On the basis of core recovery, the well was believed to have good chance to make at least a gas-distillate producer.

The wildcat had earlier given some pay indication on a drill-stem test at 9,780 ft. in the upper Rodessa section.

Freestone Wildcat to Core

Outcome of Ownby Drilling Co. 1 Utley, Claypool Survey, north of Fairfield in Freestone County, was expected early this week. The well halted drilling at 3,953 ft. to make repairs before coring ahead for the Woodbine. The well topped broken Austin chalk at 3,188 ft., called normal with the old Arkansas Fuel 1 Utley, same survey, which gave good pay promise from the Woodbine just above 4,000 ft.

Meantime, a scheduled deep test 5 miles north of Butler in east Freestone County, Ohio Oil Co. 1 Hill, Dubronner Survey, recovered sandy shale on a core at 5,121-23 ft. and continued below that point at week's end. At that time it was in the Woodbine section.

The drilling boom at the new Club Lake pool in Hunt County near Greenvale was set back last week as two more dry holes were drilled. That made four dry holes, one a 2-mile southwest outpost, and three producers completed to date. One of the dry holes, indicated some weeks ago, was finally abandoned last week after exhaustive testing. It was Grelling & Hugus 1 Graham, Hart Survey, west offset to the discovery, which went to 4,411 ft., total depth. Last core at 4,394-4,411 ft. had 15 ft. of Paluxy water sand. The well also was a failure in the Woodbine.

The other was Humble Oil & Refining Co. 1 Bracken, Voyles Survey, northeast outpost, abandoned at 2,940 ft. after getting water. This well topped the Paluxy sand at 2,877 ft.

In addition, two more disappointments were indicated. Humble 1 Aetna Life, Cunningham Survey, was swabbing salt water through perforations in the Woodbine at 2,773-82 ft., and Humble 1 Morrison, Harris Survey, was swabbing salt water through perforations in the Woodbine at 2,782-90 ft.

Third producer for the field was Hollandsworth Drilling Co. which had the discovery well and the second producer. The new well was 3 Baker, Warren Survey, southeast of the No. 1. It gaged 139.3 bbl. daily through ¼-in. choke from perforations at 2,774-90 ft.

Black Oak Drilling Gains

In contrast with the disappointments at Club Lake, two more producers were added to the Black Oak pool in Wood County, a Paluxy sand field, and five new operations were announced. New operations were:

Magnolia Petroleum Co. 1 I. E. Robertson in 65-acre tract, Dan Townsend Sur., 2,500 ft. E of Magnolia 1 White, which is ready to start, and 2,000 ft. S of Amerada 2 Kennemer, in process of completion.
C. L. McMahon 1 R. L. Youngblood, NW cor. of 70.5-acre lease in J. C. Ogden Sur.
Caraway & Phillips 1 Viola Short, SW cor. of 40-acre lease in Y'Barbo Sur.
J. A. Bracken 1 A. W. Pruitt, 43.1-acre lease in Eligio Alvarado Sur.
R. C. Caraway 1 J. H. Attaway, 40-acre lease in John Clayton Sur., Hopkins County.

EAST TEXAS COMPLETIONS

Wildcats

Ellis County: Lee Miles and M. M. Golladay 1 I. L. Griffiths, J. Blair Sur., 2 mi. SW of Maypearl, dry, T.D. 937 ft.
Henderson County: Bobby Manziel et al 1 Tina Levine, M. M. Sanches Sur., 3 mi. NW of Malakoff, dry, T.D. 4,128 ft.
Morris County: M. H. Marr 1 M. Sheppard, B.B.B.&C. Sur. 319, 8 mi. N and a little W of Naples, dry, T.D. 4,817 ft.

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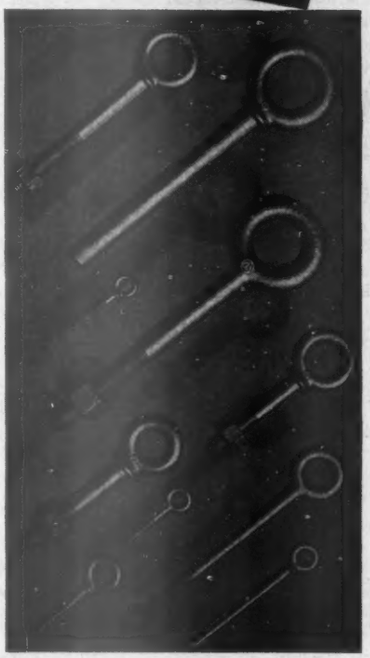

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Fields

Club Lake, Henderson County: Grelling & Hugus 1 Graham, Charles Hart Sur., dry, T.D. 4,411 ft.

Grelling & Hugus 2 Graham, Charles Hart Sur., abandoned, T.D. 200 ft.

Club Lake, Hunt County: Hollandsworth 3 J. D. Baker, I. Handlin Sur., flowed 139.38 bbl. through ¼-in. choke, base Austin chalk 2,288 ft., Woodbine 2,774-87 ft. and 2,827-57 ft., T.D. 2,966 ft.

Hawkins, Wood County: Humble 3 G. B. Lynch, J. Pollock Sur., flowed 75.9 bbl. in 6 hr. through ¼-in. tubing choke, perf. 4,621-28 ft., Woodbine 4,215 ft., T.D. 4,800 ft.

Humble 2 I. Rugherford, J. G. Heard Sur., flowed 271.71 bbl. through ¼-in. choke, Woodbine 4,154 ft., T.D. 4,681 ft.

Humble 1-B F. K. Williams, B. M. Hampton Sur., flowed 80.66 bbl. in 6 hr. through ¼-in. choke, perf. 4,726-34 ft., T.D. 4,862 ft.

Texas 3 A. D. Snider, J. P. Moseley Sur., flowed 159.94 bbl. in 12 hr. through ¼-in. choke, perf. 4,685-4,700 ft. and 4,770-76 ft., Woodbine 4,493 ft., T. D. 4,843 ft.

Texas 4 A. D. Snider, J. P. Moseley Sur., flowed 219.23 bbl. in 18 hr. through ¼-in. choke, perf. 4,704-12 ft. and 4,741-52 ft., Woodbine 4,534 ft., T.D. 4,781 ft.

(Continued on Page 189)

ROCKY MOUNTAIN AREA

Fulcher Basin Well Plugged Back to Make Gasser

By T. R. INGRAM

DENVER, Colo. — Carroll & Cornell 5 Cornell-Government was reported a completion in the Fulcher Basin field, northwest New Mexico, for 4,000,000 cu. ft., estimated, in the Picture Cliff sand. This well was carried last year as an oil discovery in a sand in the Farmington series at 940-980 ft., for estimated 40 bbl. a day. Following an unsuccessful attempt to complete it in the oil sand, it was deepened to the Picture Cliff.

General Petroleum Corp. 7-17-P, NW SW SW 17-34n-76w, a wildcat on the South Cole Creek structure between the Cole Creek and Big Muddy fields, was a failure in the first Wall Creek at 7,010-7,191 ft., and after drilling to 7,214 ft. it plugged back to test the Shannon above 4,590 ft., which had a thin streak of saturated sand on the way down.

Big West Oil Co. 1 Thiel, Midway district, Toole County, Montana, 1 mile northeast of its 1 Vial, a gas well, attempted to acidize a show of oil in a break in the Madison lime at 2,325-28 ft. but failed to penetrate the formation. On a second attempt there was a slight increase in the show, but results were similar to the first effort. It is plugging back from 2,328 to 2,320 ft. to try again. The samples of oil recovered were higher gravity than usually found either in Cut Bank or Kevin-Sunburst.

Continental Oil Co.'s Navajo wildcat, Rattlesnake district, northwest New Mexico, was tested at 6,950 ft. but results were not made public. Government officials requested the company to drill the well deeper before deciding whether it shall be taken over for use in connection with the war effort.

NORTHWEST NEW MEXICO COMPLETIONS

Fulcher Basin, San Juan County: Carroll & Cornell 5 Cornell-Government, CEL NE NE 13-29n-12w; T.D. 1,980 ft., production string set at 1,885 ft., waiting on government gage, est. 4,000,000 cu. ft. from Picture Cliff.

MONTANA COMPLETIONS

Cut Bank field, Glacier County: Castle-Pardee 2 Tribal-210, SE NW NE 13-32n-6w; T.D. 2,920 ft., no Sunburst sand, Cut Bank 2,873-2,916 ft., 5⅞-in. 2,878 ft., swabbed 167 bbl.

A. B. Cobb & Co. 2 Tribal-211, NE SW SW 19-32n-5w; T.D. 3,000 ft., 7-in. 2,953 ft., Sunburst sand 2,895-2,923 ft., show oil 2,915-25 ft., Cut Bank 2,949-84 ft., main pay 2,982-84 ft., shot, then swabbed 140 bbl.

WYOMING COMPLETIONS

Oregon Basin, Park County: Ohio Oil Co. 2 Hallene-OPC NW NE SW 29-51n-100w; T.D. 3,639 ft., pumped 434 bbl. from the Embar.

La Barge field, Sublette County: Texas Co. 2-BX Government, NE NW NW 34-27n-113w; T.D. 1,080 ft., flowed 94 bbl. from sand in the Wasatch.

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INDIANA, OHIO, KENTUCKY

Seek Sub-Trenton Pay in Northern Sector

EVANSVILLE, Ind.—The old Trenton area of northeastern Indiana has been studied for some time in the hope that sub-Trenton pays could be found. Blocks have been accumulated, the largest of which are in Wayne and Adams counties with some of them extending into Allen County. Deep gas possibilities of Jay and Blackford counties are also being studied.

At present the R. O. McKee 1 Glendening, SW SE NE 36-25n-13e, Adams County, holds the chief interest in this sub-Trenton play. From an elevation of 845 ft. this well topped the Trenton at 1,005 ft. and the St. Peter at 1,515 ft. A show of oil was reported in the dolomite at 1,799-1,804 ft. but after pumping the well for 43 hours with the drilling machine only a small show of heavy oil had been recovered. At latest reports operators were continuing to test the well and were considering the advisability of a swab test.

There is a great thickness of sandstones of Cambrian age below the Lower Ordovician lime in this sector which are untested although there is some Cambrian production in Lake and Porter counties to the west.

Longhorn Oil Corp.'s test on Greathouse Island in the Wabash River, 1 C. C. Greathouse, NW SE SE 11-7s-15w, Posey County, has been abandoned at a total depth of 2,997 ft. The test was drilled through the McClosky with no shows reported.

Gulf 1 Oscar Reis, W½ SW NW 23-7s-14w, Posey County, a wildcat 2 miles southwest of the Mount Vernon field, is drilling below 2,605 ft. Cores were taken of the Benoist and Cypress but no shows were found. The Tar Springs and Waltersburg sands were also dry.

INDIANA COMPLETIONS

Gibson County: Continental 7 Cooper, NE NW SE 12-3s-14w, pumped 82 bbl., Cypress 2,512-30 ft., T.D. 2,534 ft.
Continental 54 Maier, SW SE SW 31-2s-13w, pumped 213 bbl., natural, Cypress 2,469-92 ft., T.D. 2,499 ft.
R. L. Brown 1 Ross, Don. 27-1s-10w, dry, T.D. 200 ft.
Ray Benoist 1 Dunn, W½ SE SW 24-1-10w, pumped 25 bbl., McClosky 1,744-47 ft., T.D. 1,935 ft.
Posey County: John Lindas 1 Seifert, NW NE NW 30-6s-12w, pumped 50 bbl., T.D. 1,107 ft., old T.D. 1,098 ft., recompletion.
John Lindas 1 Spencer, SW SW 13-7s-13w, pumped 8 bbl., sand 1,938-47 ft., T.D. 1,959 ft.

OHIO

ZANESVILLE, Ohio.—The Oriskany test on the western side of the Parkersburg syncline east of McConnellsville found the sand hard and dry. Clyde M. Foraker 1 Claude Murray, Section 1, Meigsville Township, Morgan County, logged the top of Corniferous lime at 3,385 ft., Oriskany sand at 3,476-96 ft., and recovered no showings of oil or gas. Elevation of the well was 692 ft., with total depth at 3,560 ft.

Completions for the week were scattered. A shallow gasser at Chesterhill, Morgan County, was reported at 2,000,000 cu. ft. A Clinton test in Stark County was dry through the Clinton at 4,600 ft. and 17 new tests were started during the past week.

SOUTHEAST OHIO COMPLETIONS

Ashland County, Vermilion Township: Ohio Fuel 1 E. H. Arnold, Sec. 19, 280,000 cu. ft. gas, Clinton, T.D. 2,790 ft.
Coshocton County, Pike Township: Dunn Mar Oil & Gas 1 J. R. McKee, SE Sec. 22, 10 bbl., Clinton sand, T.D. 3,051 ft.
Guernsey County: Wheeling Township: Ohio Fuel Gas 1 John Ingram, NE Sec. 21, 1,440,000 cu. ft. gas, Niagara lime, T.D. 3,230 ft.
Holmes County, Monroe Township: Ohio Fuel 1 W. C. Bird, Sec. 14, 640,000 cu. ft. gas, Clinton, T.D. 3,338 ft.
Jefferson County, Island Creek Township: John Elliott 1 Pearl H. Cooper, NW Sec. 6, ½ bbl., Berea, T.D. 1,437 ft.
Lorain County, Wellington Township: Ohio Fuel 1 Fred Warner, Lot 14, dry, no Clinton sand, T.D. 2,442 ft.
Meigs County, Rutland Township: Fleming et al 3 Virgil Nelson, Sec. 22, 300,000 cu. ft. gas, T.D. 876 ft.
Ohio Fuel 1 C. O. Saxton, Sec. 35, dry, second Berea, T.D. 1,638 ft.
Pearl Ash 1 Anna Taylor, Sec. 16, dry in Maxon, T.D. 982 ft.
H. M. Nelson 1 J. C. Phillips, Sec. 33, dry in Maxon, T.D. 715 ft.
Salem Township: F. Utsinger 2 Elsworth Gorby, Sec. 2, 100,000 cu. ft. gas, Salt sand, T.D. 640 ft.
Monroe County, Franklin Township: Carlos Luburgh et al 5 J. M. McVey, NW Sec. 6, dry, lime, T.D. 1,300 ft.
Morgan County, Marion Township: Bern Oil & Gas 1 R. M. Talbott, Lot 6, 2,000,000 cu. ft. gas, Salt sand, T.D. 941 ft.
York Township: Swingle Co. 4 D. Stoneburner, Sec. 30, 380,000 cu. ft. gas, Berea 1,165-87 ft., T.D. 1,189 ft.
Ohio Fuel 2 Wm. Longstreth, Sec. 36, 130,000 cu. ft. gas, Berea 1,130-51 ft., T.D. 1,158 ft.
Muskingum County, Blue Rock Township: Industrial Gas 1 H. S. Finley, Sec. 4, 10 bbl., shot, Medina sand 4,398-4,408 ft., 400,000 cu. ft. gas, Clinton shell at 4,268 ft., Clinton 4,290-4,329 ft., dry, T.D. 4,408 ft.
Noble County, Marion Township: Marion Oil & Gas 1 A. Hurst, Sec. 11, dry in Berea, T.D. 1,792 ft.
Seneca Township: S. E. Ruby 2 D. G. Bates, Sec. 34, 50,000 cu. ft. gas, shot, Berea, T.D. 1,704 ft.
Perry County, Clayton Township: Preston Oil 4 Margaret S. Shaw, 29 bbl., shot, Clinton, T.D. 3,335 ft.
Clayton Township: Preston Oil Co. 5 Margaret A. Shaw (125 acres), NE Sec. 8, 29 bbl. and 25,000 cu. ft. gas, Clinton sand, T.D. 3,270 ft.
Thorn Township: Palm Oil Corp., Inc., et al 2 Lola Cooper, SW Sec. 13, swabbed 45 bbl. and show gas, Clinton sand, T.D. 2,735 ft.
Stark County, Lake Township: Steiner Co. 1 J. C. Steiner, Sec. 23, dry, Clinton, T.D. 4,600 ft.
Plain Township: Steiner Co. 1 Wm. Blair, Sec. 3, 170,000 cu. ft. gas, shot, Clinton, T.D. 4,647 ft.

EASTERN KENTUCKY

ASHLAND, Ky.—Four gas wells were completed in eastern Kentucky last week as drilling operations continued to show a steady improvement. One of the wells was a fine producer while the others show a good open flow.

Unofficial reports indicate some drilling opera-

(Continued on Page 191)

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Second Well Completed In Chancellor Pool

By ROBERT INGRAM

MIDLAND, Tex.—Pure Oil Co.'s one-well Chancellor pool (Delaware sand), opened early this year some 20 miles west of Fort Stockton in Pecos County, had its second well and second pay zone last week. The new well was Pure 1 Paul Legros, Section 36, Block 50, Township 10, T.&P. Survey, a west offset to the discovery, Pure 1 Frazier. It was producing from a limestone in the lower Castile, tentatively called the Lamar, which lies just above the Delaware section.

The well topped the lower Castile at 3,560 ft. set 7-in. casing at 4,657 ft., and drilled into the top of the producing lime at 5,072 ft. where drilling was halted. When production showed, it was shut in for 30 hours to erect storage. Then it flowed 230 bbl. of oil in 5½ hours through 1-in. choke, then died. Next day it was flowing by heads, made 395 bbl. in 12 hours through casing with gas volume estimated at 2,500,000 cu. ft. daily.

Early tests thus indicated a better well than the Delaware lime discovery offset which made 61.88 bbl. daily on official potential from total depth of 5,274 ft. Opening of Lamar pay also changed the Chancellor pool from just another discovery to a major development in West Texas since it was the first pay from that zone in the district. Pure officials, who were slow in getting the second well started, reflected the importance by immediately staking a third operation, the 1 Odneal, NW NW Section 42, Block 49, Township 10, T.&P. Survey, a south offset to the 1 Frazier (Texas Pacific Land Trust).

In addition, the well turned attention to the entire Delaware Basin in western Ward, northern Pecos, Loving, and Reeves counties, Texas, and southern Lea and Eddy counties, New Mexico. Oil has been produced from the Delaware Basin for many years—in fact since 1926 when the Wheat field was brought in in Loving County. But exploration has been sporadic and development limited, largely because the area is even farther removed from markets and outlets than are the fields of the Permian basin and is one of the most isolated sections of the country.

Other fields in the basin area are Mason, also in Loving County, whose nine wells have made a total of nearly 450,000-bbl. production since discovery in 1937; the one-well Monroe field in Ward County, both Delaware fields; and the one-well Anthony field in Reeves County, producing from the upper Castile.

The Delaware Basin is a structural depression lying immediately west of the Permian basin and separated from it by a regional high parallel to the westernmost trend of Permian basin production. It was filled and overlain by chemical deposits of late Permian age which are now either partially eroded away west of the Pecos River, or east of it, are masked from view by a covering of younger deposits.

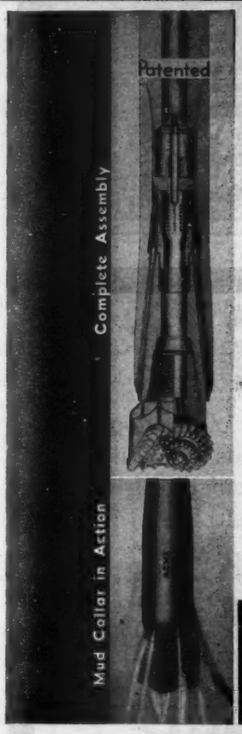
Much of the detailed information at hand concerning these deposits has been worked out by Walter B. Lang, geologist for the U. S. Geological Survey, who had access to samples and cuttings from the Pinal Dome Corp. 1 Means, SE SE Section 23, Block C-26, P.S.L. Survey, slightly east of the center of Loving County. Cuttings were taken every 5 to 10 ft. to a total depth of 5,208 ft. and from these, and cuttings from other wells, geologists have provided some subsurface markers for the Salado, Castile, and Delaware sections. Otherwise, relatively little is known about subsurface.

Last week another Delaware Basin test, Roy Johnson 1 H. L. Perkins, in the Toyah Lake area of Reeves County, was abandoned.

Ellenburger High in Sand Hills Outpost

The search for Ordovician production took another bright turn as high structural position for the top of the Ellenburger was reported at Magnolia Petroleum Co. 1 D. K. Glenn, Section 20, Block 1, H.&T.C. Survey, 2½ miles south of Sand Hills Ordovician pools in southwest Crane County and 2⅛ miles north of the Abell deep area in northern Pecos County.

The well based the Permian at 5,250 ft., logged the Simpson detrital from 5,250-58 ft., and had the Ellenburger at 5,258 ft. With elevation of 2,436 ft., this calls places the well several hundred feet high to producers at Sand Hills. It is more than 500 ft. high to Continental Oil Co. 1 E. B. Jones, which extended Sand Hills 1½ miles south. The 1 Jones, however, found the Ellenburger dry at 6,040 ft. and was plugged back to 6,015 ft. for completion in the Simpson.



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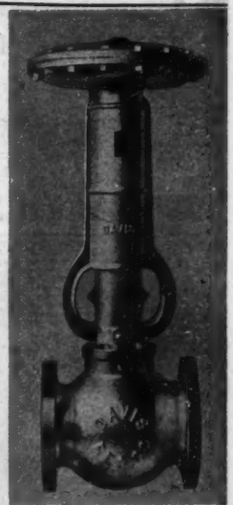

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A 30-minute drill-stem test was taken at Magnolia's well at 5,250-65 ft., but it recovered only 4 ft. of drilling mud with no shows and operator was coring ahead. Operators are looking for pay some 50 or 100 ft. in the Ellenburger.

Work was delayed for 1 day at the well in midweek when a blowout of an old well in the Abell Ordovician pool, Magnolia 2 State-Baldwin, Section 24, Block 9, H.&G.N. Survey, made it necessary for crews from the wildcat to shut down and give assistance to the old well. The 2 State-Baldwin was plugging back from 5,745 to 5,640 ft., when it broke loose and made an estimated 80,000,000 cu. ft. of gas daily until brought under control. Crews from other nearby wildcats and four cementing crews also gave assistance.

Wildcat Progress

One-half-mile southeast extension to the Clara Couch (For Lancaster) area of western Crockett County was indicated by 1,800 ft. of oil in the hole at Harris & Inman 1 W. D. Padgitt, Section 17, S. G. White Survey, from total depth of 2,131 ft. . . . Bailing test was being made at L. C. McKean (formerly R. G. Pattillo) 1 Phillips-McNutt, Section 16, Block 125, T.&S.T.L. Survey, shallow wildcat prospect in central Pecos County, bottomed at 2,371 ft. in lime. . . . Texas Co. 1 Frazier, Section 19, Block 42, Township 4s, T.&P. Survey, northeast Crane County, was drilling below 4,742 ft. in dark lime with no shows.

SOUTHERN WEST TEXAS COMPLETIONS

Wildcats

Reeves County: Roy Johnson 1 H. L. Perkins, Sec. 18, Blk. C-7, P.S.L. Sur., Toyah Lake area, elev. 2,588 ft., dry, salt 1,590 ft., Delaware lime 5,017 ft., Delaware sand 5,037 ft., T.D. 5,267 ft.

Fields

Abell, Pecos County: George T. Abell 1 H. J. Eaton, 330 ft. from NE line and 1,650 ft. from NW line Sec. 5, Blk. 3, H.&T.C. Sur., elev. 2,393 ft., flowed 961 bbl. through ½-in. tubing choke natural, McKee sand 5,112 ft., pay 5,148 ft., T.D. 5,214 ft.

Darby, Ward County: Stanolind 1-U University, SW SE Sec. 19, Blk. 16, University Sur., E offset to Darby 1 University, elev. 2,632 ft., pumped 83 bbl. oil and 5 bbl. water natural, pay 2,805 ft., T.D. 3,100 ft., P.B. 2,835 ft.

Goldsmith, Ector County: Landreth Petroleum 1-C B. H. Blakeney, NW NW SW Sec. 14, Blk. A, P.S.L. Sur., elev. 3,137 ft., flowed 84 bbl. through 14/64-in. tubing choke after acid, pay 4,127 ft., T.D. 4,172 ft., *½-mi. NE outpost.*

Keystone Colby, Winkler County: Gulf 45 Keystone, elev. 2,934 ft., flowed 186 bbl. through casing after shot, pay 3,278 ft., T.D. 3,600 ft., P.B. 3,480 ft.

McElroy, Upton County: Gulf 56 Crier-McElroy, SW SE Sec. 196, Blk. F, C.C.S.D.&R.G.N.G. Sur., elev. 2,670 ft., flowed 577 bbl. through casing after shot, pay 2,760 ft., T.D. 2,913 ft.

North Cowden, Ector County: Stanolind 1-F O. B. Holt, SW NE Sec. 18, Blk. 43, Twp. 1n, T.&P. Sur., elev. 3,081 ft., flowed 1,492 bbl. oil and 30 bbl. water through tubing after shot, lime 4,340 ft., pay 4,485 ft., T.D. 4,817 ft., P.B. 4,775 ft., *NE edge well.*

Stanolind and Delaney 5-C Smith S½ SW Sec. 7, Blk. 42, Twp. 1s, T.&P. Sur., elev. 3,028 ft., pumped 82 bbl. oil and 116 bbl. water, after shot, pay 4,220 ft., T.D. 4,550 ft., P.B. 4,478 ft., *E edge well.*

Pecos Valley, Pecos County: Jameson & Pollard 6-BF Pecos Valley Oil, 1,320 ft. from NW and NE lines Sec. 22, Blk. 10, H.&G.N. Sur., elev. 2,444 ft., flowed 17 bbl. oil on gas lift through 12/64-in. tubing choke after shot, pay 1,589 ft., T.D. 2,205 ft., P.B. 1,595 ft.

Sand Hills, Crane County, Magnolia 15 Lea, NE NW Sec. 9, Blk. 32, P.S.L. Sur., elev. 2,616 ft., flowed 779 bbl. through ½-in. tubing choke, pay 4,335 ft., T.D. 4,473 ft., *¼ mi. S of NE edge.*

South Sand Hills, Crane County: Gulf 41 Waddell et al, 660 ft. from NW line and 1,980 ft. from SW line Sec. 17, Blk. 3, H.&T.C. Sur., elev. 2,472 ft., flowed 14,937 bb. through casing after acid, Ellenburger 5,515 ft., pay 5,645 ft., T.D. 5,655 ft., *S edge well.*

South ward, Ward County: Clawson & Co. 1 Monroe et al, J. V. Borders Sur. 2, elev. 2,466 ft., pumped 30 bbl. fluid cut 50 per cent water after shot, pay 2,350 ft., T.D. 2,496 ft.

Spencer, Ward County: Stanolind 4-A Mollie E. Spencer, E edge Spencer pool, elev. 2,634 ft., pumped 43 bbl. oil plus 43 per cent water natural, pay 2,947 ft., T.D. 2,955 ft., P.B. 2,949 ft.

Taylor Link, Pecos County: George T. Morris 1 University, Sec. 24, Blk. 18, University Sur., elev. 2,585 ft., dry, T.D. 994 ft.

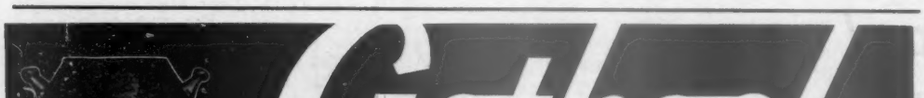
World, Crockett County: M. & M. Production 6-D Powell, NE NW Sec. 63, Blk. BB, E.L.R.R. Sur., elev. 2,795 ft., pumped 131 bbl. after acid, pay 2,615 ft., T.D. 2,658 ft.

Permian and Ellenburger Horizons Sought in Andrews County Tests

As several Ordovician tests in the Embar-West Andrews area of southwestern Andrews County neared the Ellenburger last week, Phillips Petroleum Co., major operator in the district, revealed that 12 of the 17 new tests it staked the previous week would go to the Ordovician at around 8,000 ft. This divided the entire Phillips program about evenly between Permian and Ellenburger projects.

Meantime, Simpson section of the Middle Ordovician was reported at the Atlantic Refining Co. 1-A Texum, Section 9, Block 12, University Sur-

(Continued on Page 193)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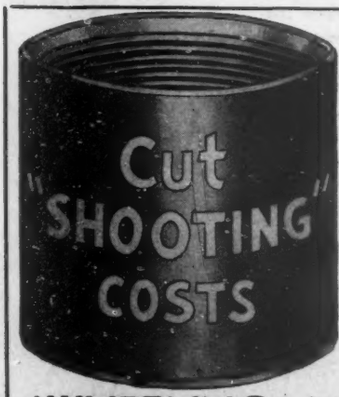

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OKLAHOMA FIELD REPORT

Romulus Townsite Discovery Makes Good Pumper

By CARL HOOT

THREE more discoveries and another large gas well last week in Oklahoma duplicated the previous week's record. A few extensions were also reported, although the total of 21 completions reflects a lull in activities which has prevailed for several weeks.

The latter part of June J. F. Smith's wildcat, 1 DeGroff, NW SE NW 1-7n-3e, on the outskirts of the town of Romulus in Pottawatomie County, found pay in the Hunton at 4,367-4,404 ft. Although only 2 miles west of the Romulus pool, it was classed as a discovery and the Nomenclature Committee recommended the name of Romulus Townsite. Original completion tests of 108 bbl. a day were exceeded considerably after acid treatment when the well flowed and was swabbed for 607 bbl. in 24 hours. Official completion reported last week rated the well 455 bbl. a day pumping.

Viola lime production was extended ½ mile east in the Hotulke pool of Pottawatomie County by Stanolind-Amerada 1 Bowling, NW SW NW 25-9-4. Originally completed in Hunton lime at approximately 4,150 ft., perforations in that zone were squeezed and the Viola at 4,365-98 ft. was tested, pumping 110 bbl. of oil a day. There is considerable Viola and some Wilcox production in the West Hotulke field but in Hotulke proper, or eastern side of the field and extending into the Earlsboro area, all wells are completed in the Hunton.

Ingling & Parker 1 Stone, SE SE 30-25n-1e, pumped 25 bbl. of oil a day from Layton at 3,237-52 ft. to extend the Tonkawa pool of Kay County 2 miles east. Top of sand was 3,213 ft. and the well was bottomed at 3,296 ft. Several small wells dot the outskirts of the Tonkawa pool and some production has been found between the 1 Stone and the main body of the pool. However, the well was considered a wildcat by oil men.

A second gas well was added to the new pool in northern Le Flore County when Western Oklahoma Gas Co. 1 Carpenter, SW SW SE 29-9n-24e, flowed 16,000,000 cu. ft. of gas a day from sand at 4,890-5,050 ft. It is a ½-mile southwest offset to the discovery well, same company's 1 McBee, which flowed 25,000,000 cu. ft. of gas from sand topped at 5,095 ft. The first well was completed in April of this year.

Other completions of interest during the week included two wells in Pure Oil Co.'s Cumberland pool, both of which flowed in excess of 1,000 bbl. a day from Oil Creek sand and an edge well in the Crescent pool of Logan County, Continental Oil Co. 1 Smith, SW NW NE 31-17-4w, which flowed 123 bbl. of 44.4-gravity oil a day from Layton sand at 4,903 ft.

OKLAHOMA COMPLETIONS

Wildcats

Kay County: Ingling & Parker 1 Stone, SE SE 30-25-1, pumped 25 bbl., Layton sand 3,237-52 ft., T.D. 3,296 ft.

Noble County: Midco Oil 1 Hudson, SE SW SE 22-23-1, dry, T.D. 4,824 ft., Layton 3,310 ft., Mayes 4,480 ft., Woodford 4,679 ft., Viola 4,726 ft., Wilcox 4,773-4,801 ft., second Wilcox 4,804-14 ft.

Pottawatomie County, 1 mi. S and E of Maud: Snedden, Duck, and Continental 1 Davis, NW NE NW 30-8-5, T.D. 4,455 ft., Verdigris 3,470 ft., Senora sand 3,490 ft., Mayes 3,855 ft., Woodford 3,965 ft., Hunton 4,127 ft., Viola 4,257 ft., Wilcox 4,438 ft., water 4,374 ft.

J. F. Smith 1 DeGroff, NW SE NW 1-7-3, pumped 455 bbl., Hunton 4,367-4,404 ft., discovery of Romulus Townsite.

Fields

Avoca, Pottawatomie County: Newt Barnett 1 Bledsoe, S½ SW NW 7-6-4, dry, T.D. 4,606 ft.

Cumberland, Marshall County: Pure 1 Chrisman-104, SE NW SE 20-5s-7, flowed 1,752 bbl., Oil Creek sand 5,812 ft., T.D. 5,917 ft.

Pure 1 State-111, SE NW SW 20-5s-7, flowed 1,125 bbl., Oil Creek sand 5,887 ft., T.D. 5,995 ft.

Pure 2 Thompson-108, SE SW SW 21-5s-7, abandoned location.

Crescent, Logan County: Continental 1 Smith, SW NW NE 34-17-4w, flowed 123 bbl., Layton sand 4,903-37 ft., gravity 44.4.

Hotulke, Pottawatomie County, recompletion: Stanolind-Amerada 1 Bowling, NW SW NW 25-9-4, pumped 110 bbl., Viola 4,365-98 ft., T.D. 4,407 ft.

Pauls Valley, Garvin County: Pure 7 Teter, SE NE SW 31-4-1, flowed 140 bbl. in 4 hr., sand 4,026-35 ft., T.D. 4,068 ft.

St. Louis, Pottawatomie County: Vierson and Mid-Continent 1 Johnson, SW NE SW 32-8-4, dry, T.D. 4,095 ft., Hunton 4,065-95 ft.

Miscellaneous

Creek County: Tibbens 2 Abraham, NE NW NE 19-14-9, dry, T.D. 1,271 ft.

Gulf 37 Berryhill, NW SE NE 17-17-12, pumped 6 bbl., sand 1,424-1,573 ft., T.D. 1,578 ft.

Gulf 40 Berryhill, SE SW NE 17-17-12, dry, T.D. 1,580 ft., input well.

A. Peppis 2-A Land, NW NE 16-18-11, pumped 7 bbl., sand 1,753-1,800 ft., T.D. 1,960 ft.

Sinclair Prairie 60, NE SE NE 19-23-12, pumped 25 bbl., Bartlesville 1,702-40 ft., T.D. 1,745 ft.

Le Flore County: Western Oklahoma Gas 1 Carpenter, SW SW SE 29-9-24, 16,000,000 cu. ft. gas, sand 4,890-5,050 ft.

Osage County: Sagamore 1, NE SE SE 20-28-10, pumped 8 bbl., Mississippian chat 1,972-77 ft.

Rogers County: Culbertson & Newswell 1 Schluneger, S½ SW SE 23-20-14, 500,000 cu. ft. gas, sand 665-85 ft. and 745-52 ft., T.D. 1,562 ft.

Tulsa County: F. G. Heiscel 6 Cline, SE SW NE 1-18-12, pumped 6 bbl., sand 1,477-93 ft.

A. Peppis 3-A Oswalt, NE SW NW 6-17-13, 500,000 cu. ft. gas, sand 1,090-1,122 ft., T.D. 1,345 ft.

Eastern Texas Fields

(Continued from Page 185)

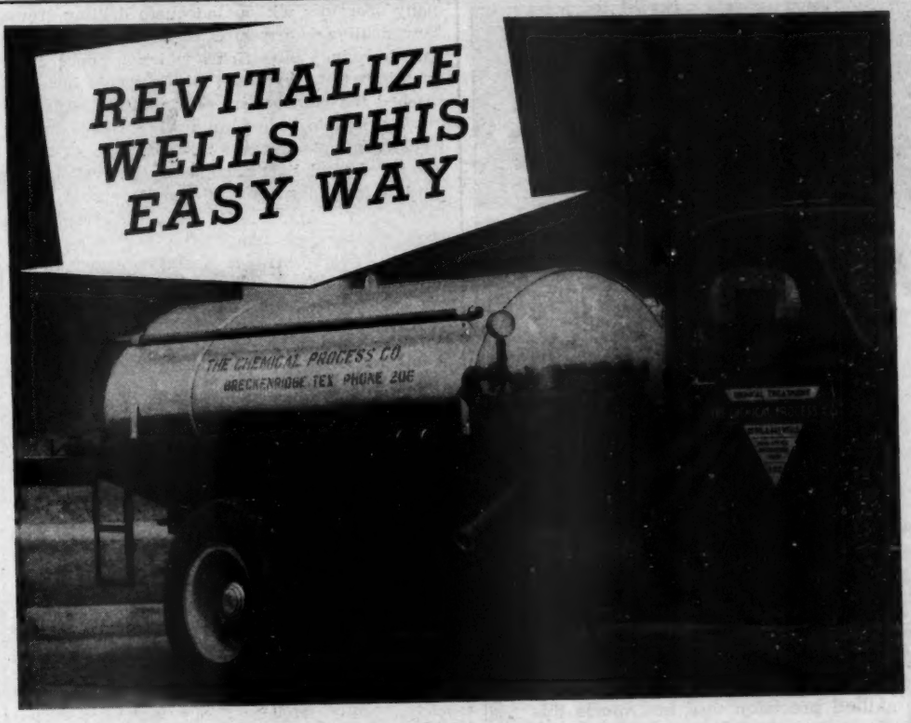
Tri-City, Henderson County: Murchison & Wynne 1 W. J. Dosser, Wiley Kay Sur., location abandoned.

EAST TEXAS BORDER COMPLETIONS

Fields

Joaquin, Shelby County: Southern Production 1 Mrs. Addie Martin et al, A. Samford Sur., gaged 85,000,000 cu. ft. gas, R.P. 2,345 ft., T.D. 5,023 ft.

Southern Production 1 Mrs. A. T. Stephens, Thomas Bristow Sur., gaged 63,000,000 cu. ft. gas, R.P. 2,329 lb., T.D. 5,160 ft.



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Seek Addition to Heavy-Oil Supply by Reconditioning

By L. P. STOCKMAN

LOS ANGELES, Calif.—The California office of the OPC has indicated that a general reconditioning program and the drilling of new wells in existing fields can be expected to result in increased production of much-needed heavy crude. This reconditioning program cannot be undertaken at present low prices of heavy crude that resulted from uneconomic competition in the marketing field prior to the Pearl Harbor attack and since which time prices have been pegged. The situation is further complicated by the migration of field men into war industries and this has left many operators without adequate drilling crews. New drilling is expected to be concentrated in San Joaquin Valley fields which produce large quantities of heavy crude oil. Operators have not reached the point where they will use reclaimed but serviceable casing in newly drilled shallow wells ranging from 750 to 2,000 ft. One lot of 54,000 ft. of used liner pipe was still available up until a few days ago with no buyers in sight. During the current week wells were completed at depths ranging from 792 to 1,552 ft. in heavy-crude-oil fields where it is not necessary to use new pipe.

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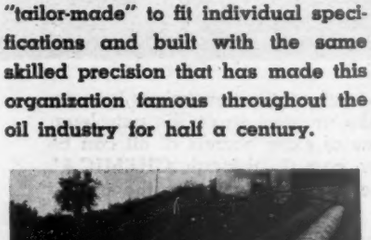

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Second Buena Park Test to Be Abandoned

Texas Co. is abandoning its second well in the Buena Park field of Orange County as a dry hole and the abandonment of this well indicates that Buena Park will be very small and of questionable value from a production standpoint. The current abandonment is 1-1 Buena Park in 6-4s-10w, located about ½ mile east of the discovery well on the Spencer lease. To the west, Texas is still drilling ahead in 4-1-E Buena Park at 10,050 ft. with the outlook none too good.

Northwest of Buena Park in the La Mirada district, Texas Co. is redrilling following the development of mechanical trouble and it may be another 3 weeks before the company reaches the original bottom at 9,658 ft. La Mirada is located due west of the west end of the West Coyote field and deep drilling was anticipated when work was started. For this reason the well still has a chance of resulting in production.

LOS ANGELES BASIN COMPLETIONS

Huntington Beach, Orange County: Southwest Exploration Co. 53 State, 4-6s-11w, pumped 271 bbl., 25.1-gravity, 0.1 per cent cut, T.D. 5,620 ft., perf. 4,918-5,620 ft., completed in tideland accumulation by directional drilling.

Wilmington, Los Angeles County: A. D. Fuller 1 Harbor, 32-4s-13w, recompleted pumping 75 bbl., 15.1-gravity, T.D. 3,702 ft., gun perf. 2,994-3,314 ft., 3,446-3,702 ft., set whipstock 2,965 ft., and redrilled to Ranger zone.

Macson Oil Co., 55-1-C Harbor, 33-4s-13w, recompleted pumping 98 bbl., 13.9-gravity, 5 per cent cut, T.D. 3,643 ft., gun perf. 2,671-2,714 ft., 2,922-78 ft., 2,978-3,208 ft., 3,338-3,641 ft., set whipstock 2,698 ft., redrilled to 3,643 ft. and finished in Ranger zone.

Royalty Service Corp., 20-5-1 Schinner, 33-4s-13w, recompleted pumping 225 bbl., 14.5-gravity, 3 per cent cut, T.D. 3,537 ft., perf. 2,534-2,914 ft., 3,144-3,534 ft., pulled 7-in. casing in original hole from 2,613 ft., redrilled to 3,537 ft. and recompleted in upper and lower Ranger zone.

Union Pacific Railroad, 82 fee, 4-5s-13w, recompleted flowing 242 bbl., 16.7-gravity, 1 per cent cut, 64/64-in. bean, flow pressure 110 lb., T.D. 3,535 ft., perf. 3,095-3,227 ft., 3,275-3,391 ft., 3,413-63 ft., 3,484-3,518 ft., plugged original hole to 3,036 ft., redrilled 3,036-3,535 ft., and recompleted in upper and lower Ranger zone.

Many Shutdown Wells Returned to Production

Crude-oil production during the current month to date has been the highest recorded in several years. The total number of actively producing wells is the highest number ever reached as for a number of years there have been a material number of wells shut in due to curtailment. This suspension of production activities during the past decade has not been limited to any special type of wells as in periods of maximum production operators have resorted to many methods to keep production within bounds. The average number of wells shut in because of high lifting costs or to curtail production has been around 4,000. Many of these suspended wells have been returned to production although there are still some potentially capable of producing that are shut in. In addition to these there are a number of wells that have been stripped of production equipment that are capable of being returned to production after being re-equipped.

SAN JOAQUIN VALLEY COMPLETIONS

North Belridge, Kern County: Tide Water Associated Oil Co. 35-21 fee, 21-27s-20e, flowed 120 bbl., 53.9-gravity, 0.1 per cent cut, 4,000,000 cu. ft. gas, 16/64-in. bean, pressures 750/925 lb., T.D. 8,227 ft., P.B. 8,140 ft., top Temblor 6,092 ft., N point 7,387 ft., Q point 7,943 ft., completed in R zone above Wagonwheel zone of Eocene age.

South Belridge, Kern County: Belridge Oil Co. 47-33-A fee, 33-28s-21e, pumped 50 bbl., 15.1-gravity, 5 per cent cut, T.D. 792 ft., 120-mesh perf. 415-792 ft., completed in upper oil zone of Pliocene age.

General Petroleum Corp. 9-3 fee, 3-29s-21e, pumped 58 bbl., 16.5-gravity, 7 per cent cut, T.D. 1,019 ft., P.B. 1,006 ft., perf. 625-755 ft., 778-901 ft., 935-1,006 ft., completed in upper zone of Pliocene age.

Coalinga Nose, Fresno County: Standard Oil Co. 26-17-F fee, 17-20s-16e, flowed 498 bbl., 27.6-gravity, 0.1 per cent cut, 220,000 cu. ft. gas, 18/64-in. bean, pressures 680/1,100 lb., T.D. 8,022 ft., 60-mesh perf. 7,946-8,020 ft., Kreyenhagen 6,685 ft., green sand 7,822 ft., bottomed in Gatchell oil sand of Eocene age 7,960-8,022 ft.

Edison, Kern County: Union Oil Co. 2 Brockman, 13-30s-29e, pumped 40 bbl., 17.2-gravity, 50 per cent cut, T.D. 1,008 ft., perf. 745-1,007 ft., completed in Chanac zone of Pliocene age.

Kettleman North Dome, Fresno County: Standard Oil Co. 76-33-J fee, 33-21s-17e, flowed 1,119 bbl., 34.9-gravity, 0.5 per cent cut, 920,000 cu. ft. gas, 32/64-in. bean, pressures 500/600 lb., T.D. 8,255 ft., perf. 8,138-8,255 ft., completed in lower Temblor zone of Miocene age.

Midway-Sunset, Kern County: Chansior Canfield Midway Oil Co. 29-26 fee, 26-31s-22e, pumped 13 bbl., 19.1-gravity, 50 per cent cut, T.D. 3,590 ft., P.B. 2,090 ft., 100-mesh perf. 1,902-2,089 ft., completed in upper zone of Pliocene age.

Standard Oil Co. 89-33-B fee, 35-31s-23e, pumped 170 bbl., 19.9-gravity, 10 per cent cut, T.D. 3,333 ft., perf. 3,096-3,330 ft., completed in second zone of Pliocene age.

Mount Poso, Kern County: Chansior Canfield Midway Oil Co. 5 Mon, 26-27s-28e, pumped 114 bbl., 15.7-gravity, 10 per cent cut, T.D. 1,552 ft., perf. 1,482-1,552 ft., completed in Vedder zone of Miocene age 1,501-52 ft.

Mount Poso, Kern County: Union Oil Co. 33 Sarret & Mack, 4-27s-28e, pumped 47 bbl., 16.2-gravity, 50 per cent cut, T.D. 1,944 ft., perf. 1,896-1,934 ft., completed in Vedder zone of Miocene age, 1,907-34 ft.

Round Mountain, Kern County: R. S. Lytle 7 Coffee, 1-28s-28e, abandoned in gray Vedder sand of Miocene age, T.D. 1,801 ft., no showings from top to bottom.

Tupman, Kern County: Richfield Oil Corp. 41-34-C Kern County Land, 34-30s-25e, flowed 1,686 bbl., 34.1-gravity, 0.2 per cent cut, 2,500,000 cu. ft. gas, two 96/64 in. beans, flow pressure 250 lb., T.D. 9,198 ft., perf. 9,020-9,191 ft., completed in upper and lower Stevens zone of Miocene age.

Ramona Test Continues Making Water

Continental Oil Co. was still pumping 1 Holser on the Ramona anticline in Ventura County at the close of the current week and while there has been a little reduction in the amount of water produced the reduction has not been enough to justify the expectation of completing a clean well on this property. The company's 1 Holser in 14-4n-18w, is making a pumping test of the interval at 4,103-4,663 ft. and current production has been averaging 82 bbl. of net 23.5-gravity oil and the cut has been around 33 per cent. This well was carried down to 5,228 ft. and cored considerable oil sand but tests show it too tight to result in a natural flow.

COASTAL DISTRICT COMPLETIONS

Temescal, Ventura County: Pacific Western Oil Corp. 12 Temescal, 4-4n-18w, pumped 260 bbl., 21.5-gravity, 1 per cent cut, T.D. 3,161 ft., perf. 2,592-2,936 ft., 3,073-3,161 ft., completed in Temescal zone of Miocene age.

TEXAS GULF COAST

New Field Found Southeast Of Ganado, Jackson County

By F. L. SINGLETON

HOUSTON, Tex.—Jackson County's rapidly growing list of fields was augmented farther the past week when W. Stewart Boyle completed his 1 Rose & Sample, G. Sutherland Survey, 4 miles southeast of Ganado, flowing an estimated 600 to 700 bbl. of pipe-line oil from a casing-perforated depth of 4,985-5,000 ft. On the basis of initial production tests, the discovery is one of the most important of the several that have been made in the county within the past year.

The well had been drilled to 6,523 ft. and 5½-in. casing cemented at 6,380 ft., plugging the hole to 6,310 ft. On a drill-stem test through perforations at 5,940-50 ft., about a month ago, the well had flowed distillate and gas, indicating the field, but those perforations were squeezed, and the casing reperforated in the shallower sand. The oil is 26.1° A.P.I. gravity, and is reported of good quality. Through ¼-in. choke, the working pressure on the tubing is 550 lb. Several other sands were cored, principal of which were at 5,550-70 ft., 6,290-6,320 ft., and 6,425-33 ft.

The discovery tentatively is being designated as the Stewart field and is located about 3 miles west of the Ganado field. It already has been the signal for the start of greatly increased drilling activity in that area, already one of the most active spots on the Gulf Coast with about a half dozen new fields having been opened comparatively recently within a radius of a dozen miles.

Within the immediate vicinity of the discovery well, the same operator has started work on four additional tests, one a northeast offset, a second about 1 mile south, a third about ¾ mile west, and the fourth about the same distance due west. On all derricks and pits have been provided and on one rig is being set up. This operator has permits for 10 wells with plans for a total of 15 wells on the 600-acre lease. In addition, new locations have been made by Pat Rutherford, J. B. Coffee, G. Warren and Salt Dome Oil Co. on adjoining or nearby leases. Mayo & Couch have a well drilling near the sand.

There also is no slackening of activity in other fields or in wildcatting over the county. Within a radius of 8 miles of Ganado alone there now are about 12 rigs running, with more scheduled to start. New locations were made during the week in the Harmon, Mayo and Ganado fields, all in the Ganado area, in the West Ranch field, and for additional wildcatting in the Vanderbilt, Cordelle and Francitas areas.

One completion each was made in the Mayo, Harmon and West Ranch fields, and two in the North La Ward field. J. G. Mayo and Rowan & Hope 1 J. T. Vance, a wildcat in the V. Garcia Survey, 3 miles northwest of La Salle, was dry at 6,001 ft., and is being quit. Ray Ranger of Houston, however, is reported staking location for another test northeast of the dry hole.

In the Lakeview area, Wharton County, adjoining Jackson County to the east, Temple Hargrove and William Helis were testing a wildcat, 1 Hartman, which was showing for production and another new field. This well perforated casing in a sand at 3,881-92 ft., and was cleaning itself flowing some oil and wash water.

TEXAS GULF COAST COMPLETIONS

Wildcats

Brazoria County: Humble 2 Houston Farms, dry, T.D. 7,501 ft.

Chambers County: Arkansas Fuel Oil 1 Guy Jackson, dry, T.D. 9,610 ft.

Fort Bend County: Goldston 1 Echols (Needville area) dry, T.D. 5,202 ft.

Magnolia 2 Huntington (Rosenberg area), dry, T.D. 8,903 ft.

Harris County: Morris-Hamilton 1 Goldsmith, dry, T.D. 7,510 ft.

Jackson County: Mayo-Rowan & Hope 1 Vance, dry, T.D. 6,001 ft.

Jackson County: Arkansas Fuel 1 Jackson, dry, T.D. 9,610 ft.

Fields

Big Hill, Jefferson County: Stanolind 3 Fitzhugh, dry, T.D. 8,031 ft.

Esperson, Liberty County: General Crude 2-A Vajdak, 424 bbl., ⅛-in. choke, set screen 8,182 ft., T.D. 9,656 ft.

General Crude 27 Davis, 190 bbl., ¼-in. choke, perf. casing 9,291-9,323 ft., T.D. 9,346 ft.

Garwood, Colorado County: Boyce & Smizer 3-B Brownson, dry, T.D. 6,150 ft.

Harmon, Jackson County: Sun 1 Harmon, 196 bbl., ¼-in. choke, perf. casing 5,384-88 ft., T.D. 5,580 ft.

Mayo, Jackson County: Crouch 1 Hafner, 108 bbl., ⅛-in. choke, perf. 5,412-16 ft., T.D. 5,610 ft.

North La Ward, Jackson County: Stanolind 1 Four Way Ranch-Johnson Unit 1, 15 bbl., 5/32-in. choke, perf. casing 5,215-21 ft., T.D. 5,222 ft.

Magnolia 22 Gordon, 94 bbl., 7/64-in. choke, perf. casing 5,207-12 ft., T.D. 5,679 ft.

Rockland, Tyler County: Rockland 5-A Boykin, pump 10 bbl., T.D. 1,263 ft.

Rosenberg, Fort Bend County: Magnolia 2 Huntington, dry, T.D. 8,903 ft.

West Ranch, Jackson County: Magnolia 238-A West, 143 bbl., 7/64-in. choke, perf. casing 5,737-41 ft., T.D. 5,755 ft.

Withers, Wharton County: Texas 88-B Pierce estate, 97 bbl., ⅛-in. choke, perf. casing 5,330-40 ft., T.D. 5,390 ft.

Eastern Kentucky

(Continued from Page 186)

tions in Greenup County but official information has not yet been received.

EASTERN KENTUCKY COMPLETIONS

Magoffin County: Inland Gas Corp. 236 J. H. Hammonds, on Howard Fork of Liking River, 1,565,000 cu. ft. gas in Maxon, T.D. 1,243 ft.

Johnson County: Inland Gas Corp. 235 Roy Fairchild et al, Rockcastle Creek, 762,000 cu. ft. gas in Big Six sand, T.D. 2,417 ft.

Kentucky-West Virginia Gas Co. 691, C. L. Lester, Jenny Creek, 379,000 cu. ft. gas in Big Six sand, T.D. 2,425 ft.

Floyd County: Kentucky-West Virginia Gas Co. 5378 Joseph Reynolds, Mud Creek, 133,000 cu. ft. gas in shale, T.D. 3,417 ft.

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ILLINOIS FIELD REPORT

Large Flow From Trenton In St. Jacob Well

MATTOON, Ill.—The finding of a large Trenton lime producer in the new St. Jacob pool in southeastern Madison County overshadowed a series of important prospective discoveries in the southern Illinois fields last week. The M. D. Bryant 1 Krie, SW SE 16-3n-6w, flowed 780 bbl. of oil from the Trenton at 2,370 ft., the largest flow ever reported from that horizon in Illinois. Other wells in the field have been completed for from 80 to 150 bbl. daily while Trenton wells elsewhere in the state have never exceeded a flow of 200 bbl. daily.

Reports received during the week end also indicated that another excellent producer was in the offing in the new field in SW NW SW 15-3n-6w, where Sohio 1 Meyer has encountered 52 ft. of Trenton pay. The Sohio well is about ½ mile east of 1 Krie.

Trenton production in Illinois to the present time has been insignificant and operators have not considered it profitable to test in any but a few fields. Fields producing from this horizon include Centralia, Salem, Dupo, and some of the old fields along the La Salle anticline. Developments in the St. Jacob pool, however, have already created considerable interest in Trenton production and may lead to widespread exploration throughout Illinois. An intensive lease and drilling play in Madison and adjacent counties has already been forecast and word received from East St. Louis indicates that the M. D. Bryant strike has been accepted as the key to a great new development program in counties adjacent to the Mississippi River.

Jeff Outpost Makes Good Flow

Pure 1 Pike, NW NW 13-1s-7e, outpost 1 mile east of Jeff, pumped 199 bbl. initially from the Aux Vases sand last week. Previous to the installation of pumping equipment the well flowed at the rate of 380 bbl. daily. The Aux Vases sand was encountered at 3,065-81 ft.

Meanwhile, another Wayne County wildcat, Shell 1 Montgomery, NW SW 14-1s-8e, was expected to make a small producer from the Aux Vases topped at 3,050 ft. No. 1 Montgomery was drilled to a total depth of 3,237 ft. and casing was set at 3,012 ft. It had a good showing of oil on a drill-stem test of the Aux Vases.

Benoist Pool Opened West Of St. James Field

Youngblood and Doran 1 Charles Bush, NE NW 28-6n-2e, is expected to open a new Benoist pool about 2 miles west of the St. James field in Fayette County. About 6 ft. of Benoist saturation were cored from 1,900 ft. and when plug was drilled the well produced water and an increasing amount of oil. The Cypress sand, productive at St. James, was topped at 1,612 ft. at the 1 Bush, but was found dry.

ILLINOIS COMPLETIONS

Wildcats

Effingham County: Standard Drlg. 1 Ehlers, NE NE SW 6-7n-4e, dry at 1,848 ft., Tar Springs 1,420 ft., Glen Dean 1,504 ft., Barlow 1,611 ft., Weller 1,657 ft., Benoist sand 1,749 ft., Renault 1,792 ft., Aux Vases sand 1,801 ft.

Franklin County: Smokey Oil et al 1 Franklin County Coal Co., NE NE NE 31-7s-2e, dry at 2,058 ft., base Pennsylvanian 1,555 ft., Menard 1,844 ft., Vienna 1,978 ft., Tar Springs 2,011 ft.

Hamilton County: Carter 1 Leslie, SE SE 11-5s-5e, dry at 3,608 ft., Menard 2,496 ft., Glen Dean 2,750 ft., Barlow 2,995 ft., Cypress 3,023 ft., Benoist 3,196 ft., Renault 3,235 ft., Aux Vases 3,309 ft., Ste. Genevieve 3,346 ft., McClosky 3,378 ft., St. Louis 3,606 ft.

Jasper County: C. R. Craft 1 Charles Baker, NE SE 20-8n-10e, dry at 2,619 ft., Glen Dean 2,082 ft., Golconda 2,133 ft., Cypress 2,230 ft., Weller 2,290 ft., Paint Creek 2,355 ft., Ste. Genevieve 2,520 ft., Rosiclare 2,525 ft., Fredonia 2,560 ft., St. Louis 2,607 ft.

Sinclair 1 E. Cook, E½ NE SE 4-5n-8e, dry at 3,163 ft., base Pennsylvanian 2,275 ft., Glen Dean 2,495 ft., Hardinsburg 2,515 ft., Golconda 2,585 ft., Barlow 2,656 ft., Cypress 2,683 ft., Benoist 2,860 ft., Renault 2,900 ft., Aux Vases 2,982 ft., Ste. Genevieve 2,993 ft., McClosky 3,097 ft., St. Louis 3,148 ft.

Lee Drlg. 1 Needham, W½ NE NE 3-5n-9e, dry at 3,175 ft., Tar Springs 2,400 ft., Glen Dean 2,504 ft., Hardinsburg 2,519 ft., Golconda 2,576 ft., Barlow 2,646 ft., Cypress sand 2,690 ft., Paint Creek 2,849 ft., Benoist 2,883 ft., Renault 2,930 ft., Ste. Genevieve 3,025 ft., Fredonia 3,059 ft., St. Louis 3,161 ft.

Jefferson County: Walter Duncan et al 1 G. A. Ernst, SE SW SE 24-1s-1e, dry at 2,405 ft., Menard 1,486 ft., Glen Dean 1,695 ft., Cypress 1,913 ft., Benoist sand 2,072 ft., Aux Vases 2,140 ft., Aux Vases sand 2,146 ft., Ste. Genevieve 2,245 ft., Fredonia 2,314 ft.

Marion County: N. Whitten 1 Anderson, NW NE SW 32-2n-1e, dry at 670 ft., sand 645 ft.

Oils, Inc., 1 Kell-Howard Comm., NE SW SE 32-1n-3e, dry at 2,720 ft., Kincaid 1,610 ft., Degonia 1,737 ft., Clore 1,758 ft., Palestine 1,800 ft., Menard 1,862 ft., Waltersburg 1,936 ft., Tar Springs 1,993 ft., Glen Dean 2,069 ft., Hardinsburg 2,088 ft., Golconda 2,158 ft., Cypress sand 2,282 ft., Weller 2,298 ft., Paint Creek 2,389 ft., Benoist 2,422 ft., Aux Vases 2,497 ft., McClosky 2,655 ft.

Morgan County: Allen J. Coe 1 Robinson, SE SW NW 29-14n-10w, dry at 1,050 ft.

St. Clair County: L. L. Benoist 1 Whittenfield, SE NW NE 7-2n-7w, dry at 1,000 ft., Golconda 410 ft., Cypress 520 ft., Ste. Genevieve 737 ft.

Wabash County: Olds & McNeil 1 Leathers, SE SE NW 33-2n-12w, dry at 2,295 ft., Glen Dean 1,725 ft., Hardinsburg 1,824 ft., Golconda 1,864 ft., Barlow 1,940 ft., Cypress sand 2,015 ft., Weller 2,037 ft., Paint Creek 2,056 ft., Aux Vases sand 2,213 ft., Ste. Genevieve 2,240 ft., McClosky 2,263 ft.

Wayne County: Pure 1 G. W. Pike, NW NW 13-1s-7e, pumped 199 bbl., natural, Aux Vases sand 3,065-81 ft., McClosky 3,173-88 ft., 3,197-3,202 ft., T.D. 3,212 ft., P.B. 3,147 ft.

White County: Skelly 1 Winter, SW NW NE 24-4s-9e dry at 3,330 ft., base Pennsylvanian 2,016 ft., Glen Dean 2,616 ft., Golconda 2,748 ft., Barlow 2,867 ft., Cypress sand 2,894 ft., Benoist 3,026 ft., Renault 3,086 ft., Aux Vases 3,145 ft., Ste. Genevieve 3,166 ft., McClosky 3,204 ft.

Randall & Brown 1 J. Brett, NE NW SE 23-5s-9e, pumped 45 bbl., 500 gal. acid, McClosky 3,148-54 ft., T.D. 3,160 ft.

Fields

Allendale, Wabash County: W. R. White 1 Breen Bros., NE SW NW 24-1n-12w, dry at 2,307 ft., Glen Dean 1,786 ft., Harrisburg 1,810 ft., Golconda 1,895 ft., Cypress 1,987 ft., Benoist 2,150 ft., Renault 2,188 ft., Ste. Genevieve 2,245 ft., McClosky 2,305 ft.

C. Keneipp 3-A T. Price, SE SW NE 14-1n-12w, dry at 1,575 ft.

Bible Grove, Clay County: Pure 1 J. Nadler, NW SE SW 4-5n-7e, pumped 107 bbl., natural, Cypress 2,498-2,507 ft., T.D. 2,502 ft.

Bone Gap, Edwards County: Cities Service 1 Baldwin-Thread, SW NW 7-1s-11e, flowed 247 bbl., perf. 3,231-48 ft., McClosky 3,243-49 ft., T.D. 3,252 ft.

Boulder, Clinton County: Texas 4 Gray Comm., NE SW SE 35-3n-2w, swabbed 165 bbl. in 16 hr., 12-qt. shot 1,205-17 ft., Benoist 1,194 ft., T.D. 1,224 ft.

Texas 2 B. Ward, NE NE NE 2-2n-2w, pumped 45 bbl., natural, Benoist sand 1,225-35 ft., T.D. 1,235 ft.

Clay City, Clay County: Pure 1-A Moseley, W½ SW SE 15-2n-8e, dry at 2,670 ft., Menard 2,250 ft., Tar Springs 2,370 ft., Glen Dean 2,470 ft., Barlow 2,627 ft., Cypress sand 2,666 ft.

Covington, Wayne County: Pure 1-C Lawrence, E½ E½ W½ NW 30-1s-7e, flowed 992 bbl., 5,000 gal. acid, McClosky 3,230-36 ft., T.D. 3,246 ft.

Kewanee 1 Beck-Samford, NW NW 29-1s-7e, pumped 107 bbl., 1,000 gal. acid, reacidized 2,000 gal., Ste. Genevieve 3,200 ft., pay 3,209-16 ft., T.D. 3,225 ft.

Sohio Prod. 3 Harris, NW SE 18-1s-7e, flowed 860 bbl., perf. 3,252-53 ft., 3,239-59 ft., McClosky 3,238-82 ft., T.D. 3,322 ft.

(Continued on Page 203)

LOUISIANA GULF COAST

Production Opened on North Flank of Anse La Butte Dome

By F. L. SINGLETON

NEW ORLEANS, La.—First production for the north flank of the Anse La Butte dome, and also for Lafayette Parish, was established the past week in Stanolind 1 Nickerson, which on potential test flowed 25 bbl. of 30.7° A.P.I. gravity pipeline oil in 2 hours through a 9/64-in. choke with casing perforated in sand at 9,782-9,818 ft. Until now production has been confined to the south, southwest and east flanks of the dome, except some small shallow production on top. All has been on the St. Martin Parish side of the line. The new well is more than a mile across the dome from the nearest production. The sand is the deepest in which production so far has been found on this dome.

The well has been drilled to 9,940 ft. after overcoming much trouble with cavities and other formational difficulties. Seven-inch casing was set at 8,902 ft. for hole protection to that level, and for completion 5-in. liner was set from 8,850-9,902 ft. A number of deep tests were drilled on the north side of the dome a number of years ago and some showings were encountered, but since the opening of production on other flanks most of the development has been confined to those areas.

In the West Mermentau field, Jefferson Davis Parish, H. M. Naylor 2 Acadia Development has opened Marginulina sand production, flowing 10 bbl. of 45.7° gravity oil an hour through ⅛-in. choke with casing perforated at 10,175-10,206 ft. This is the second well for the field, the first producing from a sand at 9,100 ft.

Gulf Refining 1 Amoskeag, Hayes field, Calcasieu Parish, is drilling ahead to deeper sands after coring good oil sand at 8,954-9,012 ft., through which 7-in. casing was cemented for protection. It is expected to drill to sand below 11,600 ft. in which the discovery well was recently completed as a gas-distillate producer, and if it does not make a well there it can come back and test the shallower sand. It is reported running from 80 to 90 ft. lower than the first well.

LOUISIANA GULF COAST COMPLETIONS

Anse La Butte, Lafayette Parish: Stanolind 1 Nickerson, 25 bbl. in 2 hr., 9/64-in. choke, perf. casing 9,782-9,818 ft., T.D. 9,940 ft.

Bayou Sale, St. Marys Parish: Humble 6-B Margaret Wooster, 226 bbl., 7/64-in. choke, perf. casing 10,107-10,117 ft., T.D. 10,250 ft.

Delta Farms, La Fourche Parish: California 6 Delta Farms, 128 bbl., 7/64-in. choke, perf. casing 8,990-9,054 ft., T.D. 9,060 ft.

Fausse Point, Iberia Parish: Sun 10 Kling & Wallet, dry, T.D 9,073 ft.

Golden Meadows, La Fourche Parish: Texas 15 La Terre, dry, T.D. 3,006 ft.

Paradis, St. Charles Parish: Humble 2 Manufacturers

(Continued on Page 194)

Permian Basin, Panhandle

(Continued from Page 188)

vey, wildcat 12 miles south of the Fullerton deep pool and 13 miles northwest of the Embar Ordovician area. The test was drilling below 8,292 ft. in lime, probably Simpson. Calls on the top of the Simpson ranged from 8,075 to 8,105 ft.

Phillips 3 University-Andrews, Section 31, Block 10, was coring below 7,834 ft. in dolomite, showing slight stains of oil and gas. Phillips 4 University-Andrews, Section 30, Block 10, ½ mile northwest, was coring below 7,823 ft. in dolomite also showing stains.

NORTHERN WEST TEXAS COMPLETIONS

Wildcats

Cochran County: Sunray (formerly J. T. O'Neal) 1 D. S. Wright, SE Lab. 14, Lge. 61, Martin C.S.L. Sur., 3 mi. N of Duggan area (Slaughter), elev. 3,705 ft., pumped 238 bbl. oil and 32 bbl. water after acid, anhydrite 2,220 ft., brown lime 3,700 ft., San Andres 4,040 ft., T.D. 4,998 ft., P.B. 4,975 ft., *discovery.*

Fields

Slaughter, Cochran County: Texas 6-F Mallett, SW SW Lab. 14, Lge. 51, Scurry C.S.L. Sur., elev. 3,627 ft., flowed 800 bbl. through casing after acid, pay 5,025 ft., T.D. 5,060 ft.

Slaughter, Hockley County: De Kalb Agricultural Association 4 Alexander, elev. 3,546 ft., flowed 1,123 bbl. through casing after acid, pay 5,000 ft., T.D. 5,035 ft.

Western States 14 Frazier, SE SE Sec. 9, Blk. X, P.S.L. Sur., elev. 3,513 ft., flowed 1,650 bbl. through casing after acid, pay 4,910 ft., T.D. 4,995 ft.

De Kalb Agricultural Association 5 Alexander, elev. 3,549 ft., flowed 1,052 bbl. through casing after acid, pay 4,999 ft., T.D. 5,043 ft.

Slaughter, Terry County: Humble 5 Coons. SW SW Sec. 11, Blk. X, P.S.L. Sur., elev. 3,518 ft., flowed 1,829 bbl. through 2½-in. casing outlet after acid, pay 4,956 ft., T.D. 5,025 ft., P.B. 5,021 ft.

Wasson, Yoakum County: Arrow Drilling 2 Security National Bank, SE SW Sec. 698, Blk. D, J. H. Gibson Sur., elev. 3,588 ft., dry, made 100 per cent sulfur water, No. 1 making 85 per cent sulfur water, also plugged, T.D. 5,261 ft.

Humble 20 Randall, NE NW Sec. 859, Blk. D, J. H. Gibson Sur., elev. 3,640 ft., flowed 453 bbl. through ⅝-in. tubing choke after acid, pay 5,040 ft., T.D. 5,110 ft., P.B. 5,105 ft.

West Fuhrman, Andrews County: Neville G. Penrose, Inc., 1 University-Cities Service, NE NE Sec. 3, Blk. 10, University Sur., ½ mi. SE of pool, elev. 3,222 ft., flowed 66 bbl. natural through 14/64-in. tubing choke, anhydrite 1,710 ft., pay 4,460 ft., T.D. 4,591 ft.

TEXAS PANHANDLE COMPLETIONS

Carson County: Skelly 149 Schafer, Sec. 190, Blk. 3, potential 169 bbl., shot 3,265-85 ft., T.D. 3,288 ft.

Gray County: Phillips 7 Swanson, Sec. 87, Blk. B-2, potential 90 bbl. oil and 130 bbl. water, shot 3,036-3,142 ft., T.D. 3,144 ft.

Skelly 10 Taylor, Sec. 24, Blk. B-2, dry, T.D. 3,154 ft., P.B. 2,850 ft.

Texas 39 Saunders, Sec. 12, Blk. A-6, potential 59 bbl., shot 2,697-2,760 ft., T.D. 2,975 ft.

SOUTHEAST NEW MEXICO COMPLETIONS

Maljamar, Lea County: Maljamar Oil & Gas 11-B Mitchell, NW SE 19-17-32, flowed 125 bbl. through open tubing, pay 3,595-99 ft, natural.

Mattix, Lea County: Plains Prod. 2 Knight, SW NW 23-24-37, flowed 1½ bbl. a day, pay 3,505-17 ft., acid.

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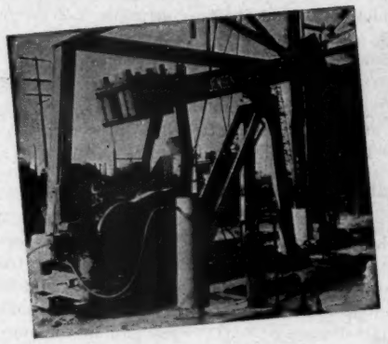

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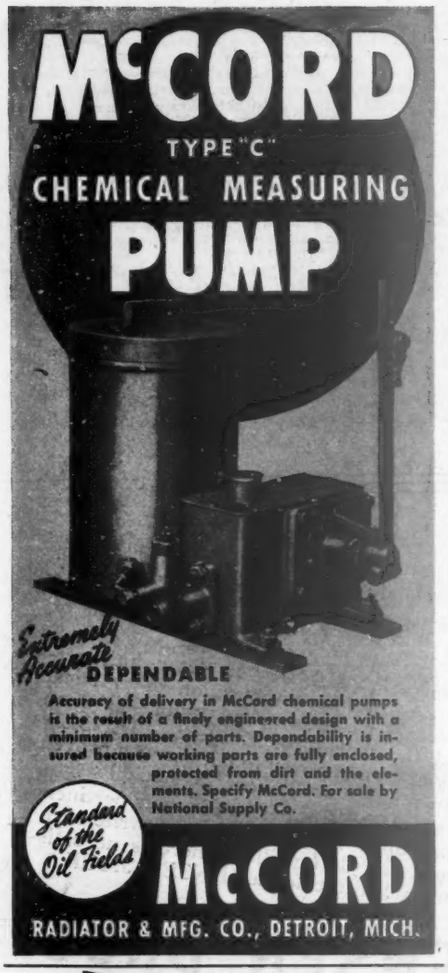
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NORTH CENTRAL TEXAS

Montague County Wildcats Drilling Ahead

By ROBERT INGRAM

WICHITA FALLS, Tex. — After getting big production at its second well in the Belcherville (Sanders) pool in Montague County, Sinclair Prairie Oil Co. located its third operation for the field last week, the 1 Mary McCall, NE NE Section 134, J. C. Mattison Survey, a south offset to the 1 Hill. It is to go to 6,900 ft.

Sinclair Prairie 2 Henderson, William Martin Survey, scheduled 7,200-ft. test east of Denver in Montague County, was drilling below 5,835 ft. in shale. The firm's 2 Jones, I. Singletary Survey A-707, in the new Forestburg area of southeastern Montague County, was drilling below 5,387 ft. In the same area and survey, Sinclair Prairie 3 Jones had drill pipe stuck at 1,985 ft. with total depth of 5,861 ft., and Sinclair Prairie 4 Jones was drilling below 5,917 ft.

Benson Brothers 1 Staley, Section 20, Block 4, H.&T.C. Survey, in the north end of the Ringgold pool of northwest Montague County, was abandoned without recovering tools lost at total depth 5,659 ft.

Preparations to drill plug were under way at Continental Oil Co. 1 Jack Hildreth, Block 53, E.T. Survey, 8 miles north of Bowie. The wildcat was bottomed at 6,550 ft. with 7-in. casing set at 6,549 ft.

Wildcat Progress

British American Oil Producing Co. 1 E. N. McCluskey, Block 263, T.E.&L. Survey, 4 miles northwest of Throckmorton, bailed salt water from perforations in the Caddo at 4,549-61 ft., and was abandoned. Location for No. 2 was also abandoned. Sinclair Prairie 1 W. O. Freeman, in the northeast part of Block 149, B.B.B.&C. Survey, between Sherman and Denison in Grayson County, was abandoned at 2,232 ft. without explanation as to why it was not carried to contract depth of 7,000 ft. Standard Oil Co. of Texas, which entered the North Texas play this month with the purchase of several big blocks, staked, with Hanlon & Buchanan, 1 Lucille Gowdy, SW SE Section 2, T.C.R.R. Survey A-1888, a 6,200-ft. test. Hill & Hill 5 C. P. Clayton, Knight Survey, deep test in the middle of Jack County's Bryson field, was ready to begin testing after drilling to 5,435 ft. in the Ellenburger.

NORTH CENTRAL TEXAS COMPLETIONS

Wildcats

Archer County: Cochran & Cain 1 C. A. Cockrell, Sec. 2450, T.E.&L. Sur., dry, T.D. 1,600 ft.
J. R. Craig 1 A. J. Ikard, J. Levins Sur. A-260, dry, T.D. 1,101 ft.
Perkins-Prothro 1 J. J. Perkins-Farmer-C, Blk. 28, J. J. Perkins subd., Bell C.S.L. Sur. A-12. dry, T.D. 1,442 ft.
Clay County: Consolidated 1 G. W. Scaling, Lot 12, H. Williams Sur. A-704, 1½ mi. SW of Joy, dry, Barnett shale 6,100 ft., T.D. 6,210 ft.
Grayson County: Sinclair Prairie 1 W. O. Freeman, NE NE B.B.B.&C. Sur. A-149, 3 mi. S of Denison, dry, T.D. 2,232 ft.

Fields

Belcherville, Montague County: Sinclair Prairie 1 Parthenia P. Hill, SE SE Blk. 115, J. C. Mattison Sur. A-471, flowed 2,484 bbl., pay 5,948-64 ft., T.D. 5,964 ft., *second well in pool (also called Sanders pool).*
Burkburnett, Wichita County: Akin, Dimock & Costley 1 E. E. Hardin, O. Farish Sur. A-383, dry, T.D. 1,623 ft.
Ferguson, Archer County: Fain-McGaha 29 W. P. Ferguson, Sec. 2, S.P. R.R. Sur. A-968, input well, T.D. 679 ft.
Fain McGaha 30 W. P. Ferguson, Sec. 2, S.P. R.R. Sur. A-968, input well, T.D. 652 ft.
Hoefle, Jack County: Hanlon-Buchanan 1 A. J. Hoefle, John W. Barrett Sur. A-48, potential 21 bbl., pay 4,857-65 ft., T.D. 5,094 ft., P.B. 4,865 ft.
Ringgold, Clay County: Continental 3 E. Spring, SW SW Sec. 23, Blk. 4, H.&T.C. Sur., dry, Ellenburger 6,065 ft., T.D. 6,203 ft., *in Spring area.*
Voth, Cooke County: Humble 3 G. H. Hellman, J. Trussell Sur. A-1225 ft., old well, pay 1,280-1,308 ft., potential 12 bbl.
Humble 15 G. W. Hellman, John Trussell Sur. A-1225 ft., old well, pay 1,260-1,320 ft., pumped 20 bbl.

Activity Increases in Northeast Novice Pool

FORT WORTH, Tex.—Activity was increasing at the Northeast Novice (Coker) pool in Coleman County, a 1942 discovery. Anderson & Prichard Oil Corp., after completing 1 Coker estate, was ready to drill in at 1 O. B. Featherton, NW NW Section 52, Block 2, G.H.&H. Survey, in oil sand picked up at 3,014 ft.

Elsewhere in the area, Anderson & Prichard had boosted its production on 2 M. K. Harris, NE NE Section 51, and was getting 36 bbl. a day from the well. The same company was drilling below 600 ft. at 3 J. W. Harris et al, SE NE Section 51.

Also in Coleman County, Anzac Oil Corp. was drilling at 735 ft. in brown shale at 1 L. V. Edington. At 710 ft. 13⅜-in. casing was set. The test is 3,600 ft. from the north line and 921 ft. from the east line of J. P. McLean Survey 687.

WEST CENTRAL TEXAS COMPLETIONS

Wildcats

Coleman County: Anzac Oil 1 J. M. Hinds, Miquet Baniles Sur., dry, T.D. 2,732 ft.
J. T. Baran et al 1 M. N. Whittington, Sec. 4, Blk. 2, T.&N.O. Sur., dry, T.D. 3,675 ft.
Comanche County: F. O. Akin 1 H. Bellamy estate, Sec. 12, Blk. 2, H.&T.C. Sur., pumped 33 bbl. oil plus 17 bbl. water after shot, lime 2,650-64 ft., T.D. 2,673 ft., *discovery.*
Jones County: Merry Brothers and Perini 1 Dr. J. S. Dodge, Sec. 5, Blk. 16, T.&P. Sur., dry, T.D. 2,407 ft.
Taylor County: Butler & Horne 1 C. H. Hudson, J. A. Nabors Sur. 9, dry, T.D. 2,900 ft.
Fain-McGaha 1 Frank E. Smith, Jose Gabo Sur. 128, dry, T.D. 2,550 ft.
Fain-McGaha 1 A. D. Fulton, Sec. 3, Blk. 18, T.&P. Sur., dry, T.D. 3,100 ft.

Fields

Northeast Novice (Coker), Coleman County: Anderson & Prichard 1 M. L. Coker estate, Sec. 72, Blk. 2, G.H.&H. Sur., dry, T.D. 3,625 ft.
Anderson & Prichard 1 John W. Harris, Sec. 51, Blk. 2, G.H.&H. Sur., dry, T.D. 3,660 ft.
Stith, Jones County: Danciger 1 A. J. Cannon, Lot 81, Godwin subd., De Witt C.S.L. Sur., flowed 133 bbl. in 10¼ hr. through ¾-in. tubing choke, natural, est. 200 bbl., sand 2,646-55 ft., lime 2,659-64 ft., T.D. 2,664 ft.
Wimberley, Jones County: Jones & Stasney and H. G. Neely 1 Mashburn, Lot 86, Godwin subd. of De Witt C.S.L. Sur., flowed 248 bbl. fluid cut 20 per cent water through 2-in. tubing after acid in 6 hr., est. 400 bbl., lime 2,423-28 ft., T.D. 2,428 ft.

Louisiana Gulf Coast

(Continued from Page 193)

Record, 1,020,000 cu. ft. dry gas, ¼-in. choke, perf. casing 9,656-66 ft., T.D. 10,985 ft.
Richie, Acadia Parish: Bering 2 F. Rupert, dry, T.D. 3,515 ft.
South Roanoke, Jefferson Davis Parish: Continental 6 Joseph Sturdivant, dry (relief well 5 Sturdivant blowout crater well), T.D. 8,510 ft.
Sulphur, Calcasieu Parish: Union Sulphur 884 fee, 20 bbl., ¾-in. choke, perf. casing 4,102-18 ft., T.D. 4,766 ft.
Vinton, Calcasieu Parish: Union Sulphur 4 Gray, 125 bbl., ½-in. choke, perf. casing 3,305-20 ft., T.D. 4,447 ft.
West Cote Blanche, St. Marys Parish: Texas 13 State-West Cote Blanche Bay, 122 bbl., ⅛-in. choke, perf. casing 8,082-90 ft., T.D. 8,660 ft.
West Hackberry, Cameron Parish: Stanolind 33 Gulf Land, dry, T.D. 9,801 ft.

APPALACHIAN FIELDS

West Virginia Well Gets Gas in Newburg Pay

PITTSBURGH, Pa. — In Pennsylvania, work was routine with none of the deep tests reaching producing horizons. In West Virginia, another test to the Newburg horizon in the Lockport dolomite found gas in commercial volume. There was also additional oil from the Big Lime pool in Kanawha County.

SOUTHWEST PENNSYLVANIA COMPLETIONS

Armstrong County: Burrell Township: Local Co. 1 J. B. Ruppert, 60,000 cu. ft. gas, Murraysville 1,154-1,220 ft., gas 1,166 ft., Bradford 3,180-3,210 ft., gas 3,193 ft., T.D. 3,305 ft.

Wayne Township: Peoples Natural Gas Co. 1 John Schreckengost, 55,000 cu. ft. gas, T.D. 2,444 ft.

Clarion County, Porter Township: T. W. Phillips Gas & Oil 4 P. C. Wells, 134,000 cu. ft. gas, Hundred-foot sand, T.D. 1,504 ft.

Greene County, Jefferson Township: Equitable Gas Co. 1 Louise L. Keenan, 74,000 cu. ft. gas, Bayard sand 2,947-75 ft., gas 2,950-53 ft., T.D. 3,142 ft.

Washington County, Hanover Township: John J. McIntosh 2 Hunisku & Pollock, 1 bbl., Berea, T.D. 1,265 ft.

WEST VIRGINIA

In Peytona district, Boone County, Owens, Libby-Owens deepened 636 Bull Creek Coal & Land Co. to 5,157 ft., or through the Newburg. From the Oriskany, there was a gas volume of 21,000 cu. ft. In the Newburg this increased to 150,000 cu. ft. of gas before shot. After shot the gage was 280,000 cu. ft. of gas. The surface elevation was 850 ft.; Big lime 1,153-1,314 ft.; Berea 1,779-84 ft.; brown shale 3,264-3,361 ft.; 3,591-4,308 ft.; Corniferous 4,338 ft.; Oriskany 4,443-49 ft.; Newburg 5,105-25 ft. Another well in Boone County and on the same lease has shown commercial gas in the Newburg.

In Kanawha County, South Penn Natural Gas Co. completed 5 Ray-Salyers in Poca district in the Big lime, total depth 1,699 ft., which was good for 35 bbl. a day before acidizing. In the same pool, this company plugged an Oriskany well, 2 J. W. Burdett, back to the Big lime at 1,716 ft. at which depth it was showing 10 bbl. a day and 200,000 cu. ft. of gas.

WEST VIRGINIA COMPLETIONS

Boone County, Sherman district: Hope Natural Gas Co. 8597 Federal Coal Co., dry, elev. 1,867 ft., Big lime 2,995 ft., through Berea, T.D. 3,756 ft.

Calhoun County, Sherman district: L. B. Carroll 10 fee, drilled deeper, 20,000 cu. ft. gas from Injun sand, Big Injun 1,680-1,700 ft., Berea 2,057-80 ft., gas 1,685 ft., T.D. 2,080 ft.

Washington district: Creed Yoak 1 Robert Sharp, ½ bbl., Maxton sand 1,575-1,630 ft., oil 1,575-1,630 ft., shot 1,575-85 ft., T.D. 1,893 ft.

Kanawha County, Poca district: Shale Gas Co. 1 E. V. Taylor, 730,000 cu. ft. of gas, Big lime 1,637 ft., Big Injun 1,798 ft., T.D. 1,803 ft.

Ritchie County, Grant district: Black & Leavitt 1 G. C. Jones, 57,700 cu. ft. gas and ¼ bbl., Keener 1,670-80 ft., Big Injun 1,682-1,812 ft., completed 27 ft. below Squaw, T.D. 1,839 ft., gas from Keener and Squaw.

Union district: Hope Natural Gas Co. 1 S. A. Hays. 100,000 cu. ft. gas, Big Injun sand, T.D. 2,001 ft.

Upshur County, Banks district: Cumberland & Allegheny Gas Co. 319 P. S. Lewis, 100,000 cu. ft. gas, Gordon sand 2,060-86 ft., gas 2,071-78 ft., T.D. 3,949 ft.

Buckhannan district: Pittsburgh & West Virginia Gas Co. 7878 H. S. Reppert, 275,000 cu. ft. gas, Benson 4,583-4,603 ft., gas 4,586-93 ft., T.D. 4,619 ft.

Meade district: Cumberland & Allegheny Gas Co. 323 D. F. Harris, dry, Fifth sand 2,305-12 ft., T.D. 2,402 ft.

ORISKANY GAS FIELDS

Jackson County, Ravenswood district: Columbian Carbon Co. 1 F. F. Battis, dry. Oriskany 5,200 ft., gas 5,236 ft., salt water 5,238 ft. filled up hole 1,500 ft., T.D. 5,250 ft.

Ripley district: Columbian Carbon Co. 1 Gertie Harmon, 12,327,000 cu. ft. gas, Oriskany 5,117-75 ft., shot 5,120-57 ft., T.D. 5,209 ft., R.P. 1,640 lb.

Spartan Gas Co. 1 B. F. Castro, 10,600,000 cu. ft. gas, Oriskany 5,276 ft., T.D. 5,288 ft., R.P. 1,760 lb.

Washington district: Columbian Carbon Co. 1 G. M. Hackney, 5,280,000 cu. ft. gas, Oriskany 5,147 ft., T.D. 5,179 ft., R.P. 875 lb.

(Continued on Page 196)

CANADIAN FIELDS

Taber Well Makes Good Pumper From Sunburst

By VICTOR LAURISTON

CHATHAM, Ont. — In the Taber field, southern Alberta, Standard of British Columbia 1 Province, LSD 9, 18-9-16w4, originally bottomed in the lime at 3,274 ft. and plugged back to test the Sunburst sand below 3,160 ft., has been shut in after swabbing over a 15-day period filled two 500-bbl. tanks and over 2,000 bbl. of sump storage. Production varied from 210 to 330 bbl. daily. Pumping equipment will be installed and, if the well holds up under continuous pumping, other drilling will be undertaken. The well is the largest producer outside Turner Valley. Hi-Test Petroleum 1, LSD 7, 24-9-17w4, is erecting derrick, and will probably spud early in August, using crude oil from Plains Petroleum 2 as fuel. Noble Drilling 1, 33-8-17w4, is standing cemented around 250 ft.

Bruderheim Structure

On the Bruderheim structure northeast of Edmonton, Clommel Petroleums 1, LSD 4, 32-55-20w4, is coring in the Lower Cretaceous formation below 2,560 ft. after encountering substantial shows of gas or oil in three different horizons. Small oil shows were met around 1,700 ft. and gas which may prove commercial at the Lea Park-Benton contact at 1,850 ft. The drill entered the Lower Cretaceous formation at 2,454 ft., more than 200 ft. higher than anticipated, and encountered an oil sand at 2,560

(Continued on Page 197)

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The Oil and Gas Journal Tulsa, Okla.

MICHIGAN OPERATIONS

Operators to Discuss Dual Completions

By OTTO C. PRESSPRICH

SAGINAW, Mich.—With Michigan's June production reaching an all-year average of 65,410 bbl. a day, observers doubted that the August quota of 66,800 bbl. will be reached because of the lack of new developments and indications that the biggest producing fields have reached or passed their peak.

Michigan producers have been invited to meet August 4 in Lansing to discuss tapping two or more oil formations through a single well in the interests of steel conservation. The federal Government has recommended the process which may be tried in the Reed City pool and in other districts where Traverse and Monroe formations overlap.

Field operations during the past week resulted in 20 completions, including seven oil wells, none large, nine dry holes, generally wildcat tests, and three natural-gas wells, one good for 18,000,000 cu. ft. a day. One location was abandoned.

June production of 1,962,287 bbl. of crude oil raised the total for the half year to 10,333,000 bbl., more than 3,000,000 bbl. over the first 6 months of 1941. Of the June production, 857,000 bbl. came from the 160 producing wells in the Reed City field.

Extent of operations continued to decline, the 20 completions comparing with but nine new drilling permits issued by the state Conservation Department. Increasing the permit total for the year to 311, they are for three locations in Osceola County, two in Allegan, one each in Bay, Clare, Mecosta and Roscommon counties.

Two tests last week interested oil men. One was a wildcat completion in Wright Township, Ottawa County, that flowed 186 bbl. by heads in 36 hours, then settled and now is pumping about 65 bbl. a day from a depth of 1,163 ft. The other is the E. V. Hilliard 1 Pinch in Section 10, Franklin Township, Clare County, logging oil at 4,968 ft. A mile south of Traverse production around 3,400 ft. in the Headquarters field, the hole was reported to have filled with nearly 2,000 ft. of oil after a 3-day stand.

MICHIGAN COMPLETIONS

Allegan County, Allegan Township: H. C. Williams 1 Shimmons, NW SW NW 22-2n-13w; wildcat, temp. abandoned, T.D. 1,610 ft.

Dorr Township: H. C. Williams 1 Stoffel, SW SE NW 26-4n-12w; wildcat, dry, T.D. 1,752 ft.

Hopkins Township: Sprenger Bros. 2 Moore & Arndt, S½ SE SE 7-3n-12w, 40 bbl. and salt water, acidized, T.D. 1,604 ft.

Bay County, Kawkawlin Township: Gulf Refining Co. 1 Sam, N½ SW SE 27-15n-4e, 50 bbl., acidized, T.D. 2,938 ft.

Monitor Township: Basin Oil Co. 1 Prevost, SE SE SW 2-14n-4e, 30 bbl., acidized, T.D. 2,900 ft.

Gladwin County: Bentley Township: Stork Oil Co. 1 Miller, SE SW SW 20-17n-2e, pumped 15 bbl., acidized, T.D. 3,524 ft.

Lake County, Pinora Township: Ohio Oil 1 Baderschneider, N½ SW NE 25-18n-11w, location abandoned.

Mecosta County, Big Rapids Township: Taggart Bros. Co. 1 Masselink, S½ NE SW 4-15n-10w, wildcat, dry, T.D. 1,262 ft.

Sheridan Township: Charles W. Teater 1 Wood et al, N½ NW NE 2-15n-7w, wildcat, dry, T.D. 3,949 ft.

Osceola County, Lincoln Township: Pure Oil Co. B-3 Richards, S½ NE NW 19-18n-10w, swabbed 5 bbl. in 11 hr., acidized; T.D. 3,661 ft., P.B. to 3,650 ft.

Marion Township: Taggart Bros. Co. 82 Gibson et al, SE 24-20n, 18,000,000 cu. ft. natural gas, T.D. 1,399 ft.

Taggart Bros. Co. 83 Day-Gibson et al, C NW Sec. 25, 4,050,000 cu. ft. natural gas, T.D. 1,411 ft.

Osceola Township: Sun Oil Co. B-1 Wirth, C N½ SE SW 23-18n-8w, dry, T.D. 4,068 ft.

Richmond Township: Ohio Oil Co. 2 Patterson, N½ NE SE 5-17n-10w, 10 bbl. first hr., ¾-in. choke, T.D. 3,547 ft.

Otsego County, Bagley Township: T. M. Rinehart and A. S. Hickock 3 Au Sable, SW 26-30n-3w, wildcat, dry, T.D. 1,531 ft.

Otsego Lake Township: Rinehart & Hickok 4 Au Sable, SE 10-29n-3w, wildcat, dry, T.D. 1,600 ft.

Ottawa County, Tallmadge Township: Smith Petroleum Co. et al A-1 Wisniewski, SE SE SW 27-7n-13w, 3,600,000 cu. ft. gas, T.D. 1,163 ft.

Wright Township: George C. Gerrard 1 Beckwith, SE SW SW 32-8n-13w, wildcat, flowed 186 bbl. by heads in 36 hr., now pumping 65 bbl., T.D. 1,163 ft.

Van Buren County, Bangor Township: T. C. Hudson 1 Jackson, NW NE NE 29-2s-16w, dry, T.D. 1,016 ft.

Columbia Township: Clapsaddle & Harris 1 Erickson, S½ NW SW 10-1s-15w, wildcat, dry, T.D. 1,182 ft.

Appalachian Fields

(Continued from Page 195)

Hope Natural Gas Co. 8623 Blanche M. Pfost, dry, Big Dunkard 1,012-1,108 ft., Salt 1,608-1,908 ft., Big lime 1,908-51 ft., Berea 2,352-58 ft., Corniferous 4,946-5,060 ft., Oriskany 5,060-5,130 ft., gas 5,138-59 ft., water 5,083 ft., shot 5,068-94 ft., T.D. 5,183 ft., R.P. gas test 150 lb.

Ripley district: Shale Gas Co. 1 Annie Good, 1,354,000 cu. ft. gas, Oriskany 5,112 ft., shot 5,123-37 ft., T.D. 5,137 ft.

Kanawha County, Poca district: Columbian Carbon Co. 1 Haynes-Ashby, 5,034,000 cu. ft. gas, Corniferous lime 5,260 ft., Oriskany 5,380 ft., not shot, R.P. 750 lb. 1 hr., T.D. 5,428 ft.

Godfrey L. Cabot, Inc., 6 Poca Coal Land Co., 4,500,000 cu. ft. gas, Oriskany 5,131-51 ft., shot 5,131-51 ft., R.P. 1,530 lb., T.D. 5,166 ft.

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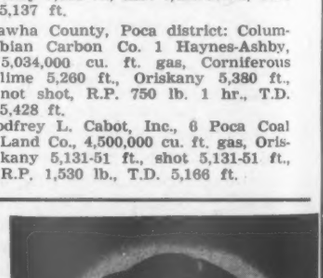

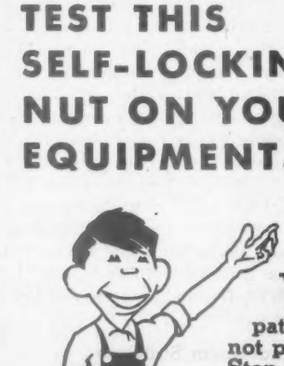

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NORTH LOUISIANA, ARKANSAS

East End of Midway Field Being Drilled Up

IN the Midway field of Lafayette County, Arkansas Fuel Oil Co. 1 Turner, SW SW 12-15s-24w, was completed for 106 bbl. of oil a day. Top of Smackover porosity was —6,114 ft. Barnsdall Oil Co. 2 McClaine, NE NW 13-15s-24w, had porosity at —6,094 ft. but completion tests had not been made at the end of the week. The field is spreading rapidly to the southeast. Barnsdall has five new wells under way, filling the 1-mile gap opened by Southwood Oil Co. 1 Hodnett which found production in SW NW Section 18.

NORTH LOUISIANA COMPLETIONS

Wildcat, La Salle Parish: Carter Oil 2-D Catahoula Lake, SW SW 27-6n-3e, dry, T.D. 5,732 ft., Wilcox 2,848 ft., Midway 5,720 ft., show oil 2,767-69 ft., and 3,766 ft.

Wildcat, Tensas Parish: Carter Oil 1 Jacoby, SE SE 34-14n-11e, dry, T.D. 4,400 ft. in salt, Sparta 1,738 ft., Cane River 2,736 ft., Tallahatta 2,978 ft., Wilcox 3,220 ft., cap rock 3,994 ft.

Wildcat, Madison Parish: Continental Oil 2 Watts, 41-15-13e, dry, T.D. 5,447 ft.

Haynesville, Claiborne Parish: Midstates 1-B Wynn, SW SE 8-23-8w, flowed 237 bbl. in 9 hr., Pettit 5,421-28 ft. and 5,474-82 ft., T.D. 5,535 ft.

Ohio Oil 1 Barker 3-P, NE SE 20-23n-8w, flowed 99 bbl. in 1 day and died, pumped 63 bbl., Pettit 5,453-57, 5,482-88, 5,508-12 ft., T.D. 5,564 ft.

ARKANSAS COMPLETIONS

Wildcat, Clark County: Coker & Grieves 1 Windham, SE SE 4-11-19w, dry, T.D. 817 ft., show oil 654 ft.

Wildcat, Columbia County: M. S. Lake 1 Young, NE SE 21-15-21w, reworked, dry, T.D. 6,717 ft., old T.D. 4,000 ft., Cotton Valley 4,896 ft., Buckner 6,360 ft., Smackover 6,627 ft., porosity 6,638 ft.

Midway, Lafayette County: Arkansas Fuel 1 Turner, SW SW 12-15-24w, pumped 106 bbl. in 12 hr., Smackover —6,114 ft., T.D. —6,200 ft.

LEGAL

United States Department of the Interior, District Land Office, Salt Lake City, Utah. Notice is hereby given that the lands herein described within the known geologic structure of the Cisco Dome Gas Field, Utah, are offered to qualified bidders of the highest amounts offered per acre as a bonus for the privilege of leasing the land under Section 17 of the leasing act, as amended by the act of August 21, 1935 (49 Stat. 674; 30 U.S.C. 226) at a sale to be held in the United States Land Office at Salt Lake City, Utah, at 10:00 o'clock a.m., August 12, 1942, in the following units: Parcel No. 1, T. 20 S., R. 21 E., sec. 1, lot 4, S½NW¼, SW¼, NW¼SE¼, S½SE¼, sec. 12, NW¼; Parcel No. 2, T. 20 S., R. 21 E., sec. 3, lots 1, 2, S½NE¼, SE¼ sec. 10, E½; Parcel No. 3, T. 20 S., R. 21 E., sec. 3, lots 3, 4, S½NW¼, SW¼, sec. 10, W½; Parcel No. 4, T. 20 S., R. 21 E., sec. 4, SE¼NE¼, NE¼SE¼, S½SE¼; sec. 9, E½; Parcel No. 5, T. 20 S., R. 21 E., sec. 11, all; Parcel No. 6, T. 20 S., R. 21 E., sec. 12, NE¼, S½; T. 20 S., R. 22 E., sec. 7, lots 2, 3, 4, SE¼SW¼; Parcel No. 7, T 20 S., R. 22 E., sec. 18, lots 1, 2, 3, 4, SW¼NE¼, E½NW¼, E½SW¼, NW¼SE¼, S½SE¼, sec. 19, lots 1, 2, E½NW¼; Parcel No. 8, T. 20 S., R. 21 E., sec. 13, all; Parcel No. 9, T. 20 S., R. 21 E., sec. 14, N½, NW¼ SW¼, S½SW¼, SE¼; Parcel No. 10, T. 20 S., R. 21 E., sec. 15, all; Parcel No. 11, T. 20 S., R. 21 E., sec. 21, E½NE¼, sec. 22, N½, N½SW¼, SE¼; Parcel No. 12, T. 20 S., R. 21 E., sec. 23, all; Parcel No. 13, T. 20 S., R. 21 E., sec. 24, all; Parcel No. 14, T. 20 S., R. 22 E., sec. 19, lots 3, 4, NE¼, E½SW¼, sec. 20, NW¼NW¼, S½NW¼; Parcel No. 15, T. 20 S., R. 22 E., sec. 20, W½SE¼, sec. 29, E½; Parcel No. 16, T. 20 S., R. 22 E., sec. 20, SW¼, sec. 29, W½; Parcel No. 17, T. 20 S., R. 22 E., sec. 30, lots 1, 2, 3, 4, E½, E½W½; Parcel No. 18, T. 20 S., R. 21 E., sec. 25, all; Parcel No. 19, T. 20 S., R. 21 E., sec. 22, SE¼SW¼, sec. 26, N½, N½SE¼, SE¼SE¼, sec. 27, N½NE¼, SE¼NE¼; Parcel No. 20, T. 20 S., R. 22 E., sec. 31, lots 1, 2, 3, E½, E½NW¼, NE¼ SW¼; T. 21 S., R. 22 E., sec. 5, NW¼NW¼ (unsurveyed), sec. 6, NE¼ NE¼ (unsurveyed). Each lease will be made subject to the unit plan for the Cisco Dome Unit Area, Utah, approved June 6, 1942. Mimeographed copies of the plan will be available for distribution to parties interested in bidding at the local land office in Salt Lake City, Utah, and offices of the oil and gas leasing division, Geological Survey at Salt Lake City, Utah, Casper, Wyoming, and Washington, D. C. Upon acceptance by the Secretary of the Interior of any bid for the unsurveyed tracts they will be surveyed at Government expense. Each successful bidder must deposit on date of sale with the officer in charge of the sale a certified check on a solvent bank or cash for one-fifth of the amount bid by him and file a showing of qualifications to receive a lease as required by section 7 of circular 1386. The remainder of the bonus bid and annual rental must be paid prior to the issuance of the lease. Bids may be submitted for two or more parcels regardless of the acreage involved since each lease will be made subject to and operated under a prescribed unit plan of development and operation. Bidders are warned against violation of section 59, United States Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids in the discretion of the Secretary of the Interior. Register.

Canadian Fields

(Continued from Page 195)

ft. which continued at least 8 ft. with good saturation. Coring will be continued for a thorough test of the Lower Cretaceous, after which tests will be made of the two upper oil sands and the gas sand. A coarser 3-ft. oil sand with heavier saturation was met at 2,588 ft. with a further sand at 2,600 ft.

Turner Valley Deep Test

In the North Turner Valley extension, Major Oil 12, LSD 4, 36-21-3w5, now the most northerly active test in the field, is in the upper Blairmore formation below 9,090 ft. Location is 3 miles north and a considerable distance east of Atlas-British Dominion 2, the most northerly producer. Drilling may have to go to 10,000 ft. or more to test the lime. The only previous Turner Valley test to go below 10,000 ft. was Okalta Oils 6, on the extreme west flank of the South Turner Valley crude area, which got salt water in the lime.

Castor Test Abandoned

In the Castor area, eastern Alberta, Shell-Chinook 1, LSD 5, 28-37-13w4, was abandoned in Devonian limestone at 4,501 ft. Structural conditions checked closely with anticipations, but no oil was encountered.

Vermilion Extension

In the Vermilion field, Vermilion Consolidated 1 O'Sullivan, LSD 3, 6 51-5w4, encountered a rich oil sand at 1,797 ft., and has cemented casing preparatory to a production test. The strike extends the field more than 1½ miles northwest of Princeville 1, the nearest producer. Atlas-Vermilion 1, LSD 12, 32-50-5w4, midway between these two producers and sponsored by Lloyd Clinch et al of Vancouver, is rigging. In the main field, Vermilion Consolidated 6, LSD 6, 19-50-5w4, has finished with 30-bbl. daily initial production.

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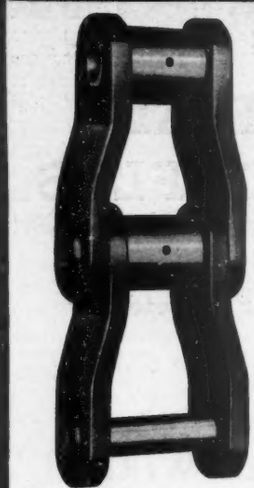

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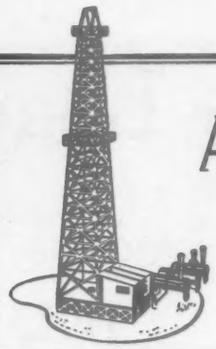

Among the Drilling

Contractors Warned to Observe Full Regulations of Wage and Hour Law

DRILLING CONTRACTORS were warned this week in a bulletin from the American Association of Oilwell Drilling Contractors to practice strict observance of the Wage and Hour Act.

An inspection of books, the association bulletin warned, may be expected at any time and all drilling contractors should be in position to show full compliance after July 15, 1941. Misinterpretations, the association points out, have caused most of the cases of unintentional violation of the wage and hour administrator's regulations.

The Wage and Hour Division has ruled that "travel time" must be considered as "hours worked," where employes are transported to and from the job by the employer with the provision that the employe shall travel exclusively in the employer's conveyance, and where the employe has no other practical way of reaching the place of employment. Where it is the custom for the employe to transport himself to and from the job, no travel time is allowed.

The association bulletin says that oil producers may be asked to pay additional travel time to roustabouts and other employes who were transported to and from the job by the employer, where there was no definite agreement on the rate for such travel time. In several cases the employes have been paid a fixed or certain amount for travel time, but the rate of such payments did not equal the rate of pay received on the job. The payment for travel time usually was established by custom, and no written agreement existed.

Where roustabouts or lease employes are regularly transported to and from the job by the employer, such travel time may be paid for by special contract at any rate above the minimum prescribed by law. Trouble may result from payment of travel time on a verbal or estimate basis.

In one case, the employer has been paying 1 hour's travel time at the full work rate, under a verbal agreement. This was more than twice the minimum rate that could have been paid by written agreement. The employe, however, contended that he should have been paid the full work rate for the full travel time, which was slightly more than the 1 hour allowed.

The Wage and Hour Division advises it is proper to permit the employe to calculate his own "travel time." Special contracts may be made at rates above 30 cents per hour to cover such travel time. Ordinary verbal agreements may not prove adequate, and it is not safe to estimate travel time in advance.

It has long been the custom for drilling crews to transport themselves to and from the job on land operations, and the practice still prevails.

●

DANUBE Oil Co., Amarillo, Tex., has been given the contract to drill a 3,400-ft. wildcat in Roosevelt County, New Mexico, 30 miles southeast of Portales. The location is C SW SE 21-30e-2s. It is 300 ft. from a test drilled a few years ago in which a good showing of oil was reported lost by faulty drilling. The operation is to start by August 1.

ZEPHYR Drilling Co., Tyler, Tex., has the contract to drill a scheduled 4,500-ft. wildcat test in the east corner of McLennan County, Texas, near Mart, on a block extending into Falls and Limestone counties. The well is C. D. Neff 1 E. B. Smith, spotted in the east corner of the W. F. Chapman Survey. The test will seek the Smackover lime.

S. A. SPRINGER has the contract to drill Barbara Oil Co. 1 Ott, a wildcat in C NE NW 22-23-14w, 3½ miles west of the Medicine Lodge field, in Barber County, Kansas.

I. W. Rogers, driller, and R. (Cotton) Makin, toolpusher, of Carl Short, Inc., at Pure Oil Co. 2 Little 109, Cumberland, Okla.

NOBLE Drilling Co. has contract to drill the California Co. 1 Louisiana-476, in 15-9n-10e, in Lake St. John, Concordia Parish, Louisiana. The test will be to the Wilcox.

PENROD Drilling Co. has contracts to drill two tests for Placid Oil Co. in La Salle Parish, Louisiana. Work has started on the 1 Kreh, in SE 25-8n-2e, at Trout Creek pool, and on the 3 John Taylor, 40-7n-3e, at Nebo.

FAIN Drilling Co. has contract for Continental Oil Co. 1 Bennett, in SE SE SE of 5-17n-2w, west of the Guthrie pool and north of the city of Guthrie, Okla., for a second Wilcox sand test. Fain was moving tools from the 1 Cain, dry hole in 8-18-4w. Location is on 900 acres of leases held by Continental. Gulf Oil and Magnolia Petroleum companies are contributing.

E. C. JOHNSTON has been awarded contract to drill Robert A. Stacey 1 Cadenhead, in SW 24-23n-8w, at Haynesville, Claiborne Parish, Louisiana.

HARRY L. EDWARDS Drilling Co., Houston, Tex., has received contracts for two new wells, one for Pan American Production Co. in the Mayo field, Jackson County, Texas, and the other for Mid-States Oil Co. in the Gillock area, Galveston County, Texas. Rig for one of these wells will be moved from Pierce Junction, Harris County, Texas, where a well is being completed for Pan American, and the other from Lovell's Lake, Jefferson County, Texas, where a well is being completed for Stanolind Oil & Gas Co.

JOHN FERGUSON and Petroleum Well Service Co., Houston, Tex., have contracted to drill a series of wells for W. Stewart Boyle in the newly opened Stewart field, near Ganado, Jackson County, Texas. Derricks are up and pits dug for four wells. Location permits have been obtained for 10 wells.

MORRIS-HAMILTON Drilling Co., Houston, Tex., is moving rig from Mayo-Gray 1 Goldsmith, wildcat test north of Barker, Harris County, Texas. The well was dry at 7,510 ft.

WYNN CROSBY Drilling Co., Houston, Tex., is preparing to test a

Contractors

9,500-9,606-ft. sand encountered in its 1 Poole, a wildcat in Wharton County, Texas. The hole was drilled to 10,777 ft.

ROWAN & HOPE, Inc., San Antonio, Tex., has taken a farmout from Stanolind Oil & Gas Co. in a block 5 miles northeast of Cordele, Jackson County, Texas, and will drill a test in Section 17, I.&G.N. Survey. The same contractors have quit a 6,000-ft. wildcat test drilled for J. G. Mayo in the Garcia Survey, 3 miles northwest of La Salle, Jackson County, Texas.

PARKER Drilling Co., Tulsa, is moving rig from Amerada Petroleum Corp. 1 Faulk, Knight Survey, east offset to the discovery well in the new Black Oak pool of Wood County, East Texas, recently completed producer, and will drill a north offset to the discovery for the same company with the rig.

A. E. KOPPRASCH has the contract for Jacob Bolema 1 Joseph Thaler, in SW NW SE 11-4n-11w, Allegan County, Michigan.

REGAL DUTCH Petroleum Co. has the contract to drill James J. McGerry, trustee, 1 Guy L. Dean and Cornelia Horvath (Comm.), in SW SE NE 26-13n-11w, Allegan County, Michigan.

EUGENE HILLIARD has been awarded contract for 2 Ranch Oil Co., in SE SW NW 31-18n-4w, Clare County, Michigan.

ASHBY Drilling Co. has the contract for Taggart Brothers Co. 1 Masselink, C S½ SW SE 18-18n-10w, in Osceola County, Michigan.

LUPHER Drilling Co. has the contract for Ohio Oil Co. A-1 H. J. Clark, C N½ NW SW 4-17n-10w, Osceola County, Michigan.

SMITH BROTHERS Drilling Co. was preparing to test the Viola lime at the 1 Dawson, in C NE NE 6-9n-3e, in the Center Point area of Pottawatomie County, Oklahoma, after finding water in the second Wilcox and more water than oil in the dolomite at 5,540-58 ft. Operators have set plug at 5,520 ft. to test the Viola.

All but one of the 254 counties in Texas now have some form of oil or gas activity, according to a state-wide survey recently made by the Texas-Mid-Continent Oil and Gas Association. Oil or gas production is shown in 165 of the counties, while an additional 83 have land under lease for exploration and development. The single exception among the counties is Rockwall

OLSON Drilling Co. has the contract for Sunray Oil Co. et al 1 Welch, in C NW SE 7-16n-2w, and has set surface pipe with machine and was moving in big tools for a test on the west edge of the Guthrie townsite, in Oklahoma.

VEEDER Supply Co. has the contract for Phil-Han Oil Co. and Adair & Morton's wildcat in NE SW NE 31-15-1w, about 9 miles north of the Roxbury pool, on a 700-acre block in Saline County, Kansas.

M. M. HARTER has the drilling contract for the Peterson Petroleum 1-A Drewett, in 6-8n-4e, a wildcat to test the Midway zone in La Salle Parish, Louisiana.

CARL B. KING, Dallas, Tex., has the contract to drill Ohio Oil Co. 1 State, location for which has been staked in the extreme northeastern part of Lea County, New Mexico. The wildcat will be drilled to 5,250 ft. unless production of sulfur water is encountered at a lesser depth.

RUSSELL & BECKHAM, of McCamey, Tex., has the contract to drill Culbertson & Irwin, Inc., 1 I. S. Ingber as a wildcat southwest of the Shugart area in Eddy County, New Mexico. It is 660 ft. out from the NE cor. 23-19s-30e. The test was drilling at the week end below 210 ft. in red rock.

GILGER Drilling Co., of Shreveport, La., has the contract for Glen Rose Gasoline Co. 1 Stiles, in C NW NW 22-21n-16w, Caddo Parish, Louisiana, for a Travis Peak wildcat. The test has been staked by the Dallas operators.

J. I. ROBBINS, drilling contractor of Shreveport, La., has been awarded contract to drill Phillips Petroleum Co. 2 Eota Realty, in SE NE 14-4n-3e, the Big Island area, Rapides Parish, Louisiana.

AMERICAN Drilling Co., Hobbs, N. M., has the contract for Neville G. Penrose, Inc., of Fort Worth, Tex., 1 State, 22-16-36, wildcat 2 miles northwest of Lovington, Lea County, New Mexico. The well is drilling below 4,235 ft.

●

More Drilling Sought On Public Leases

DENVER, Colo.—The western resources subcommittee of the Senate public lands committee has reopened its investigation of oil production on the public domain.

In addition to renewing its inquiry regarding royalty rates for oil production on the public domain, the subcommittee will take up the matter of ceiling prices on crude in the Rocky Mountain area. The latter particularly affects the black-oil market. Prices as of October 1, 1941, mostly were established when there was a lean market for black oil in this district and producers were faced with difficulties in selling their production at any price. Since then the market for black oil has definitely been strengthened and the demand increased to the point where more wells are being drilled in the black-oil fields than any other. This is due to the war demand. The old prices, however, are held down at the level existing before the change for the better took place. Oregon Basin crude, for example, has a ceiling price of 50 cents a barrel, while the same grade has a ceiling price of 89 cents in the Mid-Continent, 96 cents in California, and $1.12 on the Gulf Coast.

In California it has been recommended to OPC that most of the restrictions on the development of heavy-oil fields be lifted. The development of such fields in the Rocky Mountain territory is going ahead at an accelerated pace, but the ceiling prices are retarding the work.

●

Contractors Have Trouble Getting Tires for Pushers

DRILLING CONTRACTORS report it increasingly difficult to obtain tires of any kind for crew and toolpushers' cars. Under the general tire-rationing plan outlined several months ago, it was thought that the drilling industry would be able to get necessary tire replacements. However, the Dallas Office for Emergency Management has announced that crew cars and toolpushers' cars are eligible only for recaps. Trucks may be able to obtain a few tires, but the quota is very low. Defense workers are chiefly eligible for the new second-grade tires now manufactured for low-speed driving.

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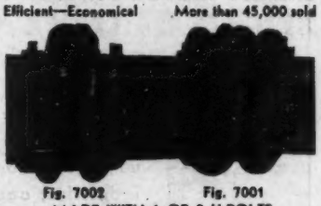

Fig. 7002 Fig. 7001
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GEOMORPHOLOGY

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BY A. K. LOBECK
Professor of Geology, Columbia University
731 pages, 6 x 9, fully illustrated, $4.50

Here is an intensely interesting and graphic study of the face of the earth, systematically explaining all types of landscapes in terms of their origin and stage of development.

With many photographs and diagrams comprising about half of the volume, this book deals with the forms produced by destructive forces such as streams, glaciers, waves, wind and organisms, and describes several kinds of mountains, volcanoes and craters.

CHAPTERS

1. Introduction
2. Rocks and Structures
3. Weathering
4. Underground Water
5. Streams in General
6. Young Streams
7. Mature Streams
8. Alpine Glaciation
9. Continental Glaciation
10. Waves
11. Wind
12. Organisms
13. Coastal Plains
14. Plains and Plateaus
15. Dome Mountains
16. Block Mountains
17. Folded Mountains
18. Complex Mountains
19. Volcanoes
20. Meteor Craters

Book Department
THE OIL AND GAS JOURNAL
Tulsa, Oklahoma

Reserves Added by Discoveries Do Not Balance Withdrawals

(Continued from Page 55)

by a whole series of discoveries in the northern coastal region. Wilcox production has been demonstrated to be a possibility in widely scattered sections of the coastal plain which have previously been virtually untested. Many of the earlier Wilcox pools in Texas were small and 1942's crop have been of much greater importance, not only because of the larger reserves which they contain but also because of the heightened interest they have engendered. Added to the increased importance of the Wilcox is the discovery of oil in the Tuscaloosa in east-central Louisiana. This adds a sand generally correlated with the Woodbine to the list of objectives to be sought and will probably result in having many wells in the updip Wilcox sector go completely through the Upper Cretaceous. Potentially this discovery may be considered as important as the original discovery of Woodbine sand production in the fault-line district, except, of course, that there is little likelihood of finding another East Texas.

On the Gulf Coast the search of flank production in old fields and for haloes of oil production around gas-distillate fields has continued and the success obtained will keep that area busy for several years in exploring the potentialities of known structures.

In West Texas, the most significant development is the extension of Ellenburger production into Ward and Andrews counties. Discovery of Cambrian oil in Pecos County is of relatively minor importance because of the much greater known yield of the Ellenburger. This extension leads to the hope that much of the area now known to be productive only in the Permian will prove to have a lower and equally important pay. Some geologists have held for some years that Ellenburger production in West Texas will be of importance equal to that of the Permian. The first half of 1942 has done more to confirm these views than any other period of equal length since the discovery of the Big Lake deep pay.

The Rocky Mountain fields and California have not yielded much in the way of new developments. Extension of production north of Coalinga was proved last year, and this year has not only confirmed this discovery but has also indicated that it may not be of major importance. Deeper drilling, particularly in Circle dome in Wyoming, has resulted in new production and will make drilling to the Tensleep almost obligatory on every structure where it can be reached. Colorado's deeper pays have also proved of greater importance than was thought. The Rocky Mountain states have, however, so much acreage that is practically proved but as yet undrilled that stepping out in search of new production is of less importance here than elsewhere.

So far, 1942 has not seen the discovery of any oil by rank wildcats remote from present production. It has confirmed the beliefs of many geologists that the place to find oil is alongside of or below those areas in which it has previously been found.

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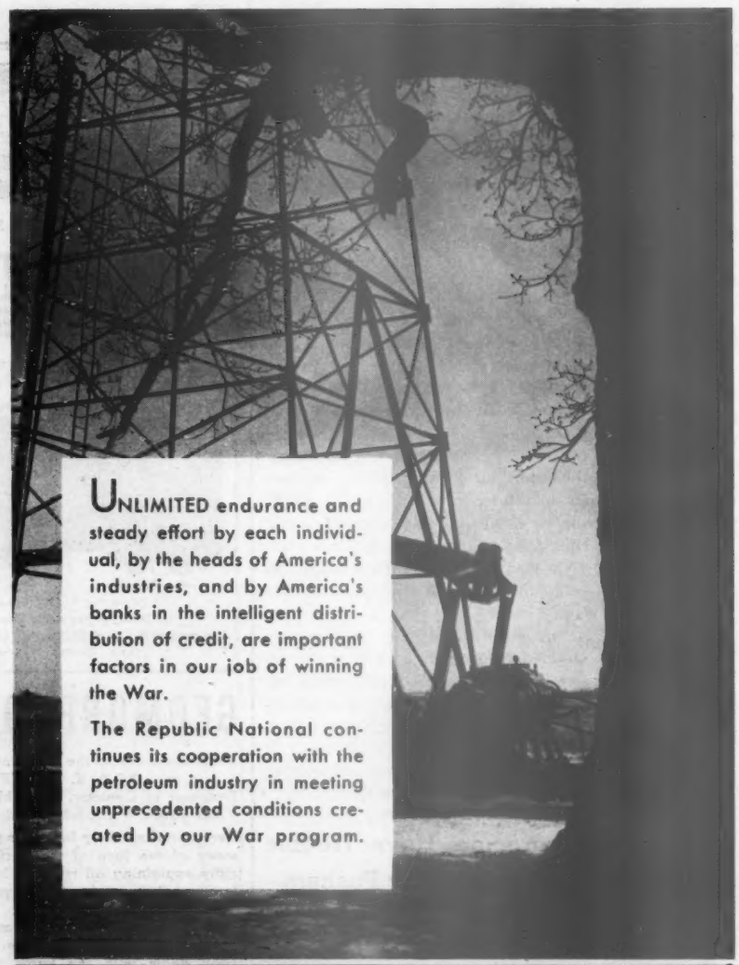
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Drilling in the United States Falls Far Below Recent Levels

(Continued from Page 77)

other Ordovician fields have many undrilled locations. Many of the older fields such as Goldsmith, McElroy and others have not been limited by dry holes. West Texas suffered less than most other districts during the past 6 months because of normal 40-acre spacing in many fields and, given any improvement in marketing conditions, it may see considerably more activity.

In New Mexico, production restrictions were more severe than in any other part of the country. Nevertheless, activity was up to last year's level. The fields flanking the main Artesia-Maljamar trend are not drilled up by any means. Activity can be expected to remain at present levels if there is no increase in allowables and to increase if the state is given additional quotas.

Rocky Mountain Area

The same marketing difficulties that beset the other states remote from markets are also apparent in the Rocky Mountain states in spite of the fact that their production has increased. Their potentialities have also increased and at a faster rate. Deep drilling has uncovered new pays in Wyoming, extensions have been found in Colorado and Montana fields and further development will probably take place. It may be expected that this district will see more drilling in the next 6 months than during the past half year.

California

Deep drilling in California has declined considerably and there is little reason to expect much of a revival in the near future as the demand for light oils has fallen off to a considerable extent. There is, however, a shortage of heavy crude and much activity is expected in fields which can provide it. Many shut-down wells will, of course, be reconditioned and put back into service but there will have to be many other wells drilled. This is particularly true in the Los Angeles Basin fields where operators tended to pass up the shallow zones and go after deep high-gravity production. The coastal district, particularly in Santa Maria and Santa Maria Valley, will probbly also see considerable drilling during the next half year.

Personal Paragraphs

JOHN J. DEMPSEY, who has been with East Ohio Gas Co., Cleveland, Ohio, for the past 13 years, has resigned his position as assistant superintendent in charge of the division extending from that city to the Ohio River, to become associated with his father, HARRY A. DEMPSEY, oil and gas producer, at Cleveland. In his new connection, Mr. Dempsey will serve as superintendent of operations for his father, who for the past 40 years has been active in the area east of the Mississippi, and currently is developing gas properties in the Hinckley Township field of Medina County, Ohio. Mr. Dempsey is a mechanical engineer by profession, having attended Miami University, Oxford, Ohio.

HUGH STOREY, JR., scout with Ohio Oil Co. at Midland, Tex., for the past 2 years, has been accepted in the U. S. Navy and is en route to San Diego, Calif., for training. He enlisted at Dallas, Tex.

JOSEPH JENSEN, chief petroleum engineer of Tide Water Associated Oil Co. in California, recently attended the graduation exercises of Massachusetts Institute of Technology from which his son graduated.

ARTHUR HARVEY, Dallas, Tex., independent oil operator, was notified of his appointment as a captain in the U. S. Army Air Corps. A captain in the infantry during the last war, he served overseas with the Second Division.

EARL DEMOND, for many years connected with Exeter Refining Co., Long Beach, Calif., has been elevated to the post of assistant to the president of the Douglas Oil & Refining Co., Gardena Calif.

JOHN McMAHON, former oil man of Tulsa once associated with the old Gypsy Oil Co. and at another time with Sinclair Prairie Oil Co., has moved to Fort Worth, Tex., where he is associated with Snowden & McSweeney Co.

W. B. WILSON, chief geologist of the Gypsy Division of Gulf Oil Corp., visited Alberta recently to study possibilities of oil development.

ALAN MAGEE SCAIFE, a member of Gulf Oil Corp.'s board of directors and finance committee since 1940, has been elected vice president of the company.

LEE HAUGEN, superintendent of the Ponca City, Okla., refinery of Cities Service Oil Co., has been transferred to the East Chicago, Ind., refinery. He has been at the Ponca City refinery since 1926.

CHARLES H. DOBBINS, former title assistant, Standard Oil Co. of Texas, Houston, Tex., is now stationed at Ellington Field, near Houston, where he is a corporal in the Army.

TRUMAN BRANTON, production superintendent, Housh & Thompson, Inc., Houston, Tex., has received a commission as first lieutenant in the Army Air Force, and has left for Miami Beach, Fla., where he will be stationed.

FRANK HILBORN, who has been engaged in work as gager and pipeline inspector for Magnolia Petroleum Co. in Venezuela for 3 years, has returned to his home in Electra, Tex. Another Electra man who has returned after service abroad is CLACY HUTCHENS, who has spent 3 years in Egypt.

R. CLAY UNDERWOOD and PAUL HULL, two young oil men from Wichita Falls, Tex., have left for Miami Beach, Fla., to begin duties as second lieutenants in the U. S. Army Air Force. The former has been associated with Underwood Oil Co. for several years, while the latter leaves his connection with L. V. Hull & Sons, oil operators.

Do You Remember?

From The Oil and Gas Journal Files

40 YEARS AGO

Reports received from the Anse la Butte and Bayou Bouillon fields in Louisiana indicate that important developments may be expected in these localities. Developments will be watched closely from now on.

The Triple Alliance Oil Co. has been organized with a capital of $20,000 for the purpose of pumping and handling the product of Spindletop wells which are now being operated. Equipment that will produce from 2,000 to 3,000 bbl. a day from each well operated will be installed.

Henry Miller, of Manhattan Oil Co., states that his company has contracted to deliver a total of 560,000 bbl. of oil. Pumps have been installed on two of the company's four wells in Spindletop.

25 YEARS AGO

Joy-riding autoists are burning gasoline in immense quantities. They like to go while the going is good. Later they expect to find their joys all cluttered up by restrictions.

Bartlesville, Okla., boosters offer to donate $50,000 for a building and site for a government experiment station to solve petroleum problems and find ways of increasing the value of oil by expanding its yield of products.

Oil men are protesting the Senate's proposition of putting control of petroleum requirements of the Government during the war in the food bill, and some changes are now expected to result.

10 YEARS AGO

Harry F. Sinclair is in California, and it is expected that some definite action will be taken this week in regard to the purchase of the properties of Richfield Oil Co. of California by Consolidated Oil Corp.

J. C. Russell, drilling superintendent for Champlin & Bass, won the annual Mid-Continent oil field golf tournament held at Twin Hills Golf Club, Oklahoma City.

Reports from the International Oil Conference in Paris are optimistic, indicating that something definite will be accomplished toward the stabilization of oil markets outside the United States.

J. L. HARPER, geologist and geophysicist, is in Ohio and other parts of the East, doing resistivity and magnetometer work.

GEN. HORTA BARBOSA, president of the National Petroleum Council of Brazil, has arrived in the United States for an extended visit, and is now touring major refineries and oil fields.

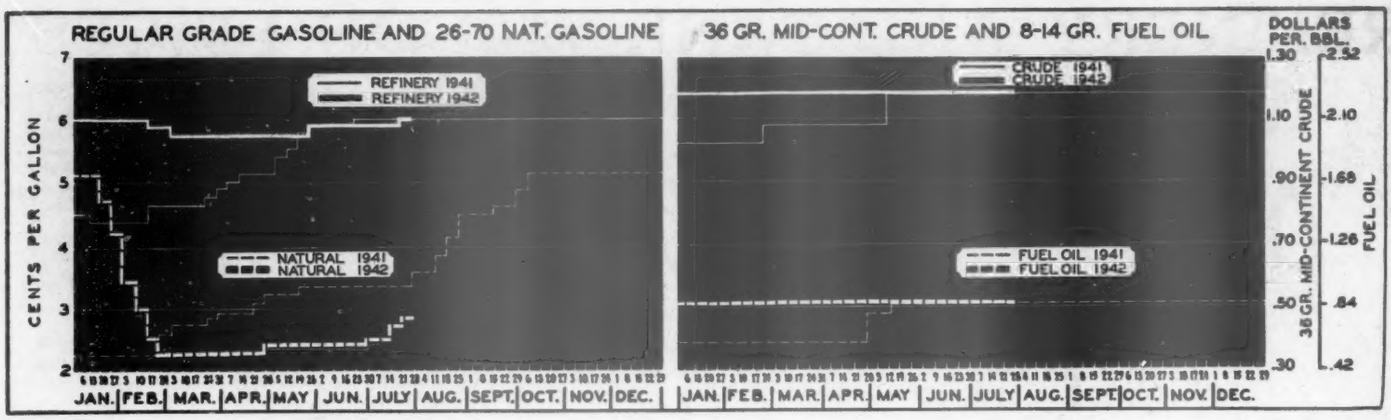
FRANK S. MORROW, formerly an accountant with British American Oil Producing Co. at Tulsa, has been commissioned a lieutenant in the Army Engineers Corps, and is stationed at Camp Gordon, Augusta, Ga.

JOHN HEMPHILL, engineer at Glenpool-Kiefer for Sinclair Prairie Oil Co., has gone to the Fort Schuyler Ordnance Works of the U. S. Navy. He becomes a lieutenant, junior grade, in the Navy's Ordnance Corps.

MICHAEL T. HALBOUTY, former consulting geologist and petroleum engineer, Houston, Tex., has been transferred back to Fort Benning, Georgia, as infantry instructor, following a short tour of duty at Wichita, Kans.

D. A. HULCY, president; T. B. GREGORY, chairman of the board; J. M. SIMPSON, vice president and director, and THOMAS C. COCHRAN, director, officials of Lone Star Gas Corp., visited Oil City, Pa., last week, and met with prominent citizens of that city at a luncheon.

J. H. KELSEY, district land man at Corpus Christi, Tex., for Sinclair Prairie Oil Co., has been commissioned as lieutenant in the Air Corps, and has been ordered to Miami Beach, Fla., for training. JOHN M. JOHNSON, who has been land man at Baton Rouge, La., temporarily succeeds Mr. Kelsey.


REGULAR GRADE GASOLINE AND 26-70 NAT. GASOLINE
CENTS PER GALLON
REFINERY 1941
REFINERY 1942
NATURAL 1941
NATURAL 1942
JAN. FEB. MAR. APR. MAY JUN. JULY AUG. SEPT. OCT. NOV. DEC.
36 GR. MID-CONT. CRUDE AND 8-14 GR. FUEL OIL
DOLLARS PER BBL.
CRUDE 1941
CRUDE 1942
FUEL OIL 1941
FUEL OIL 1942
36 GR. MID-CONTINENT CRUDE
FUEL OIL
JAN. FEB. MAR. APR. MAY JUN. JULY AUG. SEPT. OCT. NOV. DEC.

MARKET DEVELOPMENTS . . .

Mid-Continent

HIGHER prices for refinery motor fuel and natural gasoline were quoted by most Mid-Continent suppliers this week. Top quotations of regular refinery motor fuel are now 6 cents per gallon, up 0.125 cent from the previous high of the price range.

Oklahoma (Group 3) natural-gasoline manufacturers asked 2.825 to 3 cents per gallon for 26-70 material at the start of this week and reported that a significant volume is moving at the high of the quoted range. North Texas manufacturers advanced their quotations to a range of 2.5 to 2.625 cents per gallon and reported no adverse reaction from potential buyers.

Movement of natural gasoline to the northern and eastern markets has been increasing during recent weeks. Supplies are approximately in balance with requirements and at the prevailing prices blenders can realize satisfactory margins on operations. Natural-gasoline manufacturers anticipate that the market will continue strong.

Reductions in motor-fuel stocks continue at a rate of about 1,500,000 bbl. weekly. Stocks are now approximately 2,225,000 bbl. lower than a year ago and the rate of production is substantially lower, being in the neighborhood of 42 to 44 per cent on crude compared to a yield of about 48 per cent in August 1941. Refinery operating trends away from high yields of gasoline, relatively high consumption in view of rationing and tire conservation and slightly lower runs to stills are factors contributing to consistent reductions in inventory. Some Mid-Continent refiners were reported this week seeking to purchase motor-fuel supplies in the open market in order to cover commitments.

Considerable new business from eastern purchasers may accrue to interior refiners after August 1 when the Defense Supplies Corp. starts absorbing the abnormalities in overland transportation of petroleum products to the East Coast. High freight rates have argued against maximum shipments of petroleum from the Mid-Continent and Southwest despite the willingness of East Coast suppliers to disregard costs on minimum essential supplies. Eastern buyers may be more inclined to purchase against next winter's demand, providing the tank cars can be obtained for shipment.

East Coast

NEW YORK.—The new permanent gasoline-rationing plan, expected to be a far more efficient device than its temporary predecessor, went into effect in District 1 last week. The new plan will correct two of the evils that characterized the former plan, the allowance of unlimited supplies to owners of commercial vehicles and the absence of penalties for dealers who dispensed gasoline without punching ration cards.

Under the new plan dealers' stocks can be replenished only in the amount shown to have been sold by vouchers detached from ration books. Since the dealer would be penalized by reductions in subsequent deliveries if vouchers are not collected, it is obvious that this will be a powerful deterrent to unrestricted sales.

The new plan has been criticized in that it fails to restrict the time during which coupons may be used. Unless there is a marked improvement in the heating-oil storage position in the near future, it is freely predicted that the value of the coupons will be reduced. In this event, motorists may use as many, up to eight, of their coupons as possible in order to fill up to the limit of their storage capacity before the coupon value is reduced. Another criticism is that if the limited supplies do not move readily some dealers may resort to price concessions and for this reason some dealer organizations have applied for a floor under service-station prices.

With the heating-oil storage situation still far from satisfactory, it has been predicted that gasoline ration-coupon values will be reduced in order to allow more fuel oil to be brought in. The amount of the reduction and the time it will be put into effect are conjectural.

SENTENCE SUMMARIES

MID-CONTINENT: Refinery motor fuel and natural-gasoline prices advance on strength of insatiable demand.

GULF COAST: Absorption of abnormal overland freight charges by federal Government may spur refinery sales.

EAST COAST: Lack of purchase spacing in permanent rationing plan foreseen as potential troublemaker.

PENNSYLVANIA: Refiners unable to satisfy all inquiries. Demand for lubricating oils increasing with tempo of industry.

PACIFIC COAST: Fuel oils steady. Gasoline sales are spotty although improvement predicted for remainder of summer.

A.P.I. REFINERY REPORT

Week Ended July 18, 1942

(Figures in thousands of barrels)

	Dly. crude runs to stills	Stocks: Gasoline	Residual	Gas oil
Appalachian	166	2,825	556	564
Ind., Ill., Ky.	734	15,682	3,495	4,336
Okla., Kans., Mo.	377	7,556	1,474	1,459
Censored group*	1,612	39,818	16,944	16,643
Rockies	95	2,254	565	379
California	598	15,934	54,196	11,795
Total July 18, 1942	3,582	84,069	77,230	35,176
Total July 11, 1942	3,582	85,658	77,891	34,418
Total July 19, 1941	3,819	86,291	91,059	40,724

Note: Refinery runs and stocks for week ended July 25, 1942, appear on Trends page.

*Reports combined on East Coast, Gulf Coast, Louisiana-Arkansas and Inland Texas at request of OPC.

CRUDE-OIL STOCKS

(Bureau of Mines estimate)

Week ended:	Bbl. of crude*
July 18, 1942	250,505,000
July 11, 1942	251,311,000
July 19, 1941	254,048,000

*Excludes, heavy, unrefinable stocks in California.

Gulf Coast

HOUSTON, Tex.—The Gulf Coast refinery-gasoline market continues unsettled. Kerosenes, gas oils, and fuels remain strong, in good demand and command ceiling prices, but gasoline lacks life, moves only spasmodically.

What effect war payments will have on gasoline prices at the Gulf is a question that is causing considerable speculation. Particular concern centers around the advances authorized in ceiling prices on the East Coast.

The gasoline market is becoming increasingly individualistic with the prices involved being governed almost entirely by the circumstances in each trade. Usually the circumstances have to do with transportation facilities available. Consequently, the market, such as it is, lacks composure.

No sales of importance were reported during the week.

Pacific Coast

LOS ANGELES, Calif.—Gasoline demand this month is below last year, but substantially in excess of May and June. Out-of-state automobiles have shown a material increase during the past 15 days indicating that people east of California are vacationing at a distance from home despite the seriousness of the rubber situation. Licenses represented include New York, Massachusetts, Pennsylvania, New Jersey and other eastern states. Texas licenses are always in evidence.

Fuel-oil stocks continue downward in the Pacific Coast territory and there is no evidence that there will be any change in this condition as long as production of heavy crude oil is held at the present rate.

Gas-oil stocks have shown reductions in June and July to date and the practice of blending gas oil with heavy fuel is expected to continue. The only way in which this practice can be avoided is to reduce cracking operations to a minimum and take off only the heart cut in straightrun operations.

REFINERY AND TANK-WAGON PRICES

(Prices as of July 28)

Refinery Gasoline

Octane (A.S.T.M.):	†80	78	74-76	72-74	68-70	63-66	60 & lower
Mid-Continent*				5.750-6.000		5.375-5.625	5.000-5.125
Pennsylvania			6.750-7.000				
Gulf Coast‡	6.00-6.50			§5.750-6.250	§5.750-6.250	§5.250-5.750	§5.000-5.500
Northeast Coast	12.200			11.700	11.700		
Pacific Coast		6.750-7.000	6.500-6.750	6.375-6.500	6.000-6.375	5.500-5.750	5.000-5.125

*Basis Group 3. †1939 C.F.R. (research method). ‡Integrated companies restricted to lowest prices. §Unleaded.

Quotations are f.o.b. plant in cars and in cents per gallon except where otherwise noted. They are exclusive of the federal excise taxes of 1.5 cents a gallon on gasoline and 4.5 cents a gallon on lubricating oils, and do not include marine lighterage charges.

Natural Gasoline

Grades:	26-70	18-55	75-85(350-375)
Oklahoma (Group 3)	2.875-3.000	3.375-3.500	
North Texas	2.500-2.675	2.875-3.000	
North Louisiana	2.625-2.750	2.750-2.825	
California			5.000-5.500

Kerosene and No. 1 Fuel Oil

Gravity:	46	45	42-44	41-43	38-40
Mid-Continent*			4.500-4.750	4.375-4.625	
North Louisiana				4.500-4.750	
Pennsylvania	6.250	6.125-6.250			
California				4.500-5.500	4.250
Northeast Coast				7.700	
Gulf Coast				3.875	

*Basis Oklahoma Group 3.

Tractor, Diesel, and Bunker Fuel Oil

Specifications:	46-48° G.	24 D.I.	48-52 D.I.	58 & above	Diesel bunkers	Bunker C
Mid-Continent*	4.125					
California		2.750-4.000			‡$1.35-1.45	$0.85-0.90
Gulf Coast			4.000	4.125	1.45	0.85
Northeast Coast				7.800	2.222	1.80
North Louisiana						†0.80-0.85

*Basis Oklahoma Group 3. †10-14° gravity. ‡Pacific Specification 200.

Furnace Oil, Gas Oil, Fuel Oil

	No. 2	No. 3	No. 5	No. 6
Mid-Continent*	3.500-3.625	3.375-3.500	$0.85	$0.85
Pennsylvania (West)	5.625-5.875	5.375-5.875	†5.250-5.500	
Northeast Coast	7.8	7.8	1.85	1.80
Pacific Coast	5.5	5.5	‡0.80-95	$0.80
Gulf Coast	3.875-4.0		1.65	0.85

*Basis Oklahoma Group 3. †36-40 gravity fuel oil. ‡Pacific Specification 300. §Pacific Specification 400.

Lubricating Oils

Bright and Steam Refined

OKLAHOMA (Group 3)—		
200-210 D, 10-25		27.00
150-160 D, 0-10		23.00
120-125 D, 0-10		22.00
Steam refined:		
600 dark green (untreated)	9.00	9.50
PENNSYLVANIA—		
Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		30.50
15 pour point		29.50
25 pour point	25.00	28.00
Steam refined:		
600	15.00	16.00
650	15.50	16.50
600 flash	16.00	17.50
630 flash	17.00	17.50

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—	
0-10 pour point:	
200-S	15.00
300-S	18.00
500-S	19.50
600-S	20.00

Note: Viscous neutrals, 10-25 pour, quoted 0.5 cent under 0-10 oils.

Neutral Oil

CALIFORNIA		
Pale oils:		
200-2½-3	7.00	7.75
400-3-4	7.25	8.00
600-3-4	8.75	11.00
Red oils:		
200-4-5	7.00	7.75
400-5-6	9.00	11.00
500-900, 5-6½	9.25	11.25
GULF COAST—		
Pale oils:		
200-3	8.50	8.75
300-3	9.00	9.25
500-3½	9.75	10.00
750-3½	10.00	10.25
2,000-4	10.50	10.75
3,000-4	12.25	12.50
PENNSYLVANIA—		
150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point		38.50
10 pour point		37.50
15 pour point		36.50
25 pour point		31.00
200 vis. at 70° F., 3 color:		
Zero pour point		40.50
10 pour point		39.50
15 pour point		38.50
25 pour point		33.00

Wax

(Cents per pound)

OKLAHOMA (Group 3)—	
124-126 (A.m.p.) w.c. scale	4.350-4.550
PENNSYLVANIA (inland refineries)—	
122-124 (A.m.p.) w.c. scale	4.250
124-126 (A.m.p.) w.c. scale	4.250
NEW YORK—	
Wax in bags fully refined:	
130-132 (A.m.p.) wax	6.250
133-135 (A.m.p.) wax	6.550
Crude scale:	
124-126 (A.m.p.) w.s.	4.350-4.455
124-126 (A.m.p.) y.s.	4.350-4.455

EXPORT PRICES

Gasoline—60-62° Gravity, Maximum 400 End Point

Octane:	72-74	68-70	65-66	60
Gulf Coast	6.500	6.250-6.500	5.875	5.625
Pacific Coast		6.125-6.500	5.875-6.000	5.500-5.625

Distillate and Fuel Oil

	Kerosene	Diesel fuel				Bunker
	41-43	24 G.	48-52 D.I.	58 D.I.	Bunkers	C grade
Gulf Coast	4.000-4.250		4.125-4.375	4.375	$1.65-80	$0.85-95
Pacific Coast	4.750-5.000	1.25-30			†1.35-45	*0.80-90

*Pacific Specification 400. †Pacific Specification 200.

Lubricating Oils

	Neutral oils		Bright and cylinder stocks		
	200-3	150-3	200-3	150-3	600&630 S.R.
Mid-Continent	16.8		28.8	24.8	
Pennsylvania	43-50	41-46	36-37	36-37	26.5-27

GASOLINE AND KEROSENE TANK-WAGON PRICES IN 50 CITIES

(Gasoline prices based on regular grades, tax included, undivided dealer)

ATLANTIC AND NEW ENGLAND

(Socony-Vacuum Oil Co., Inc., and Atlantic Refining Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Baltimore, Md.	17.55	5.50	11.10
Boston, Mass.	17.00	4.50	10.40
Burlington, Vt.	19.00	5.50	
Buffalo, N. Y.	18.30	5.50	11.20
Dover, Del.	18.80	5.50	12.80
Hartford Conn.	17.70	4.50	
Manchester, N. H.	19.40	5.50	11.40
Newark, N. J.	16.80	4.50	10.30
New York, N. Y.	18.20	5.50	10.40
Philadelphia, Pa.	18.30	5.50	12.55
Pittsburgh, Pa.	18.80	5.50	12.90
Portland, Me.	18.40	5.50	10.50
Providence, R. I.	17.10	4.50	10.20
Washington, D. C.	16.80	3.50	11.60
Average 14 cities	18.01	5.07	11.28

(All prices undivided dealer basis.)

CENTRAL

(Standard Oil Co. of Indiana, Standard Oil Co. of Ohio, Continental Oil Co. and Texas Co.)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Chicago, Ill.	13.40	4.50	10.30
Cleveland, Ohio	15.00	5.50	*9.00
Dallas, Tex.	13.00	5.50	7.00
Des Moines, Iowa	14.40	4.50	9.80
Detroit, Mich.	14.40	4.50	9.60
Fargo, N. D.	16.90	5.50	11.30
Huron, S. D.	16.30	5.50	10.70
Indianapolis, Ind.	15.20	5.50	9.80
Little Rock, Ark.	17.50	8.00	10.00
Milwaukee, Wis.	16.10	5.50	10.50
Minneapolis, Minn.	15.40	5.50	10.30
Omaha, Neb.	15.40	6.50	9.80
Tulsa, Okla.	16.50	7.00	8.50
Wichita, Kans.	12.70	4.50	8.00
Average 14 cities	15.15	5.57	9.61

*Includes 1-cent state tax.

SOUTHEASTERN

(Standard Oil Companies of New Jersey, Kentucky, and Louisiana)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Atlanta, Ga.	21.50	7.50	11.40
Birmingham, Ala.	23.10	8.50	11.00
Charleston, S. C.	21.05	7.50	
Charleston, W. Va.	21.35	6.50	11.90
Charlotte, N. C.	22.20	7.50	11.90
Jacksonville, Fla.	21.50	8.50	10.40
Jackson, Miss.	18.00	7.50	8.50
Louisville, Ky.	17.00	6.50	8.50
Memphis, Tenn.	17.75	8.50	10.50
New Orleans, La.	17.25	8.50	*10.00
Norfolk, Va.	19.45	6.50	12.60
Average 11 cities	19.92	7.59	10.67

*Includes 1-cent state tax.

MIDWESTERN

(Continental Oil Co.)

	Dealer tank wagon	Combined tax	Kero tank wag.
Albuquerque, N. M.	17.50	7.50	10.00
Boise, Idaho	20.10	6.50	16.50
Casper, Wyo.	17.00	5.50	12.00
Denver, Colo.	14.50	5.50	11.00
Helena, Mont.	17.00	6.50	13.00
Phoenix, Ariz.	18.50	6.50	12.50
Reno, Nev.	17.50	5.50	13.50
Salt Lake, Utah	18.50	6.50	14.50
Average 8 cities	17.58	6.25	12.88

PACIFIC COAST

(Standard Oil Co. of California)

	Dealer tank wagon	Combined tax	Kero. tank wag.
Portland, Ore.	17.00	6.50	13.50
San Francisco, Calif.	14.50	4.50	11.50
Seattle, Wash.	17.00	6.50	13.50
Average 3 cities	16.17	5.83	12.83
Average 50 cities	17.47	5.96	11.02
Average last week	17.47	5.96	11.02

Illinois Fields

(Continued from Page 192)

Dale, Hamilton County: Carter 5 Hale, NW NE NE 1-6s-6e, dry at 3,279 ft., Kincaid 1,956 ft., Menard 2,196 ft., Waltersburg 2,277 ft., Vienna 2,331 ft., Tar Springs 2,364 ft., Glen Dean 2,418 ft., Golconda 2,585 ft., Barlow 2,690 ft., Cypress 2,730 ft., Benoist 2,991 ft., Aux Vases 3,033 ft., Ste. Genevieve 3,072 ft., McClosky 3.153 ft.

Carter 1 M. Mayberry, NW NW SW 12-6s-6e, flowed 556 bbl., 60-qt. shot 3,025-42 ft., Aux Vases 3,025-47 ft., T.D. 3,053 ft.

Dundas, Jasper County: Roy Power 1 J. Frohning, E½ NE SW 33-6n-10e, pumped 160 bbl., 1,000 gal. acid, reacidized 3,000 gal., Fredonia 2,790 ft., pay 2,808-20 ft., T.D. 2,820 ft.

Pure 1 G. Dillman, E½ NE SW 18-5n-10e. flowed 475 bbl., 5,000 gal. acid, McClosky 2,855-60 ft., 2,877-83 ft., T.D. 2,893 ft.

Pure 2 C. A. Miles, E½ NE NE 18-5n-10e, pumped 16 bbl., 2,000 gal. acid, McClosky 2,855-58 ft., 2,866-67 ft., 2,882-86 ft., T.D. 2,900 ft.

Pure 2 Cavin, NE NE 7-5n-10e, pumped 50 bbl., 2,142 gal. acid, McClosky 2,820-21 ft., 2,847-60 ft., T.D. 2,893 ft.

Dundas, Richland County: Roy Powers et al 1 F. Wright, E½ NE SE 25-5n-9e, pumped 20 bbl., 1,000 gal. acid, reacidized 3,000 gal., 45-qt. shot 2,878-84 ft., 15-qt. shot 2,888-92 ft., 4,000 gal. acid, McClosky 2,879-89 ft., T.D. 2,921 ft., P.B. 2,900 ft.

Fairfield, Wayne County: City of Fairfield 1 Jack Darnell, NW SE 36-1s-7e, dry at 3,415 ft., Glen Dean 2,705 ft., Golconda 2,737 ft., Barlow 2,916 ft., Renault 3,158 ft., Aux Vases sand 3,229 ft., Ste. Genevieve 3,263 ft., Rosiclare 3,300 ft., Fredonia 3,327 ft., St. Louis 3,411 ft.

Hoodville, Hamilton County: Texas 1 Davenport, NW SE NE 11-6s-6e, dry at 3,284 ft., Glen Dean 2,430 ft., Golconda 2,580 ft., Barlow 2,686 ft., Cypress 2,734 ft., Benoist 2,946 ft., Aux Vases 3,016 ft., Ste. Genevieve 3,064 ft., Rosiclare 3,110 ft., McClosky 3,134 ft.

Keensburg, Wabash County: Tide Water 8 LeGier, NE SW NW 16-2s-13w, pumped 18 bbl., pumped off, Cypress 2,388 ft., Weller 2,401 ft., T.D. 2,420 ft.

Louden, Fayette County: Carter 3-D Hooper Comm., SE SW 22-8n-3e, pumped 140 bbl., natural, Devonian 2,959 ft., pay 3,042-46 ft., T.D. 3,046 ft.

New Harmony, White County: Calstar Pet. 35-3 Miller-Ford, SW SW NW 22-4s-14w, pumped 15 bbl. oil and 20 bbl. water, 3,000 gal. acid, McClosky 2,936-42 ft., 2,968-71 ft., T.D. 2,976 ft., P.B. 2,946 ft.

Sun P-1 E. S. Jacobs "B," NW NW SW 28-4s-14w, gas-input well, saturation 2,585-2,604 ft., Benoist 2,702-30 ft. (saturated), T.D. 2,730 ft.

Noble, Richland County: Pure 24 Coen, NE NE 9-3n-9e, pumped 239 bbl. oil and 25 bbl. water, perf. 2,610-12 ft., Weller 2,583-2,616 ft., T.D. 2,660 ft., P.B. 2,656 ft.

Phillipstown, White County: Jarvis Bros. 1 K. and E. Spencer, NW SW SW 31-4s-11e, pumped 40 bbl., 20-qt. shot 2,021-34 ft., Clore 2,019-33 ft., T.D. 2,034 ft.

Roland, White County: Carter 1 H. B. McCormick, NW NW 15-7s-8e, pumped 31 bbl., natural, Waltersburg sand 2,238-42 ft., T.D. 2,243 ft.

St. Jacob, Madison County: M. D. Bryant et al 2 Meyer, SW SE SE 16-3n-6w, pumped 85 bbl., natural, Trenton 2,329 ft., T.D. 2,361 ft.

Salem, Marion County: Texas 1 F. Fricke, W½ SE NW 16-1n-2e, pumped 50 bbl., natural, Benoist 1,908-19 ft., T.D. 1,919 ft.

Sims, Wayne County: N. V. Duncan 1 Gregg Comm., W½ SW NE 27-1s-6e, pumped 11 bbl. oil and 19 bbl. water, 3,000 gal. acid, McClosky 3,188 ft., T.D. 3,219 ft., P.B. 3,190 ft.

Production stepped up by cleaning sand faces

Information supplied by "Oil and Gas Journal"

Production from many wells pumping from 1 to 30 barrels a day is often limited by deposits on the sand face. The latter may be due either to paraffin dropping out, or to oxidation.

There are several inexpensive methods of removing the obstruction. In one case, hot distillate, which is afterwards pumped out, is used to dissolve the obstruction. In another, cold distillate is pumped in and allowed to remain sometime before removal.

Dilute and inhibited hydrochloric acid is said to be successful. Another inexpensive treatment is the use of sodium hexametaphosphate and quebracho tannin. One operator is using quebracho tannin alone.

The latter two treatments result in considerable loosening of the sand and sloughing into the hole.

Where wells are small, the cost of the treatment must be kept to the minimum. However, increase of 100% in production from old wells whose rates are relatively low is not uncommon — so that the expense of cleaning the sand faces is usually justified.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.
MOLYBDIC OXIDE—BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"

Clima[illegible] Company
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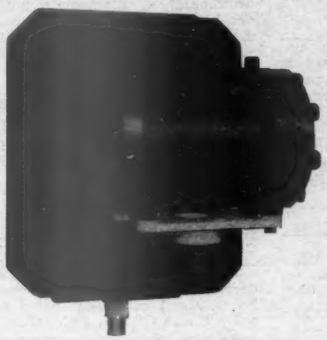
MOLY

EQUIPMENT PROGRESS...

Taylor Aneroid Manometer For Flow or Liquid Level

The absence of mercury or other liquid from this latest development of the Taylor Instrument Companies, Rochester, N. Y., removes the possibility of



product contamination and the hazard of mercury being blown due to line surges or carelessness. Further advantages are that sealing liquids are rarely required and vital mercury is released for the war effort.

Replacing the stuffing box is a new torque tube assembly which gives a completely closed system and is designed so as to eliminate friction and lubrication. This new assembly also does away with the lost time involved in maintenance. Friction, lost motion and wear are further reduced by the absence of internal pivots and springs.

Metal bellows respond to the pressure variations and insure faster response under ordinary circumstances with immediate reaction to sudden changes in flow. The sturdy bellows are built to withstand high overrange without damage.

Under steady-flow conditions the aneroid manometer is accurate within 1 per cent of scale range. It is available for all types of indicating and recording meters and controllers and is supplied for standard ranges between 20 and 500 in. of water. The range can be changed right on the job by substituting precalibrated torque tubes.

New Deal Takes Over Butler Equipment Line

New Deal Specialty Co., Okmulgee, Okla., announces the acquisition of the Charles A. Butler Manufacturing Co. products, also of Okmulgee, which has for many years manufactured a line of oil-field equipment widely used in the oil industry in this and foreign countries. The New Deal Specialty Co. will continue sale and service of the Butler products.

The Butler products include their line of slip ring casing elevators, automatic casing spiders, safety tubing elevators and spiders, compound-lever wire-line drilling clamps, roller-bearing beam pulleys, and pipe tongs.

The company announces that it has also acquired the real estate and plant buildings of the Butler company, all of which will be maintained for future manufacturing operations. Thus, company officials believe, they will be better equipped for the service of the Butler products as well as the "New Deal" equipment which includes pipe-cleaning and pipe-straightening machines, tripods, etc., also widely used in the oil industry.

TRADE LITERATURE

B. F. GOODRICH CO., Akron, Ohio.—Catalog section on belt vulcanizers, giving pertinent details on the type of construction of vulcanizers, dimensions, capacity and type of current necessary to operate them. A full page is devoted to a table giving all this information in condensed form. The section also describes splicing tools used with the vulcanizers and splicing materials.

WALTER KIDDE & CO., 140 Center Street, New York, N. Y.—Three-color poster showing correct method of using carbon dioxide, water and foam, and vaporing liquid fire extinguishers, and the hazards for which each type is best suited. The poster is printed in red and black, and is especially designed for plant display.

Parkersburg-O.C.S. Consolidation Announced by Casper A. Ruf

Casper A. Ruf, president and general manager of Parkersburg Rig & Reel Co., has announced that after July 31, O.C.S. Manufacturing Co. will terminate its corporate existence, thereafter operating as a division of Parkersburg Rig & Reel Co.

D. C. Myers, former vice president and general manager of O.C.S., has been elected a vice president of Parkersburg Rig & Reel Co. with headquarters at Coffeyville, Kans.

William Schwemlein has been named as manager of the Coffeyville works, O.C.S. division.

Warner Lewis Manufacturer of Cronkhite Valves and Bleeders

Warner Lewis Co., Tulsa, is now manufacturer and distributor of the Cronkhite shut-off valves and automatic bleeders. Designed to keep air out of gathering lines by shutting off field tanks when they are emptied, it also is used in connection with an air bleeder which not only lets air pass out from the ground line, but also relieves line pressure built up by gas or heat. Over 1,600 of the Cronkhite valves are now in service in Mid-Continent and Illinois fields.

AMONG EQUIPMENT MEN

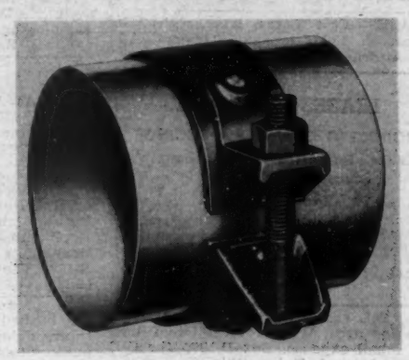
Raymond Gram Swing to Go On Air for Socony-Vacuum

Socony-Vacuum Oil Co., Inc., soon will launch a new series of radio broadcasts featuring Raymond Gram Swing, internationally known analyst of domestic and world affairs. The new series will go on the air September 28, and is planned to include four 15-minute broadcasts at 10 p.m. eastern wartime, from coast to coast, over 140 stations of the Blue Network.

"Socony-Vacuum's sponsorship of Raymond Gram Swing is particularly fitting," Eben Griffiths, advertising manager of the company, declares. "The company itself is a world leader in the production of 100-octane gasoline for aviation purposes and is heavily engaged in the war effort. Socony-Vacuum is producing large quantities of specialized fuels and lubricants for American war plants and the armed forces. Greatly expanded facilities for production of toluene, a basic material for explosives, and butadiene, a basic ingredient in synthetic rubber, were recently announced by the company. The new Raymond Gram Swing broadcasts," concluded Mr. Griffiths, "are merely further evidence of Socony-Vacuum's belief that an informed public and abundant modern munitions both are essential to winning the war. We feel that advertising today should be essentially informative."

New Clamp to Increase Pipe Life Introduced by Dresser

Dresser Manufacturing Co. of Bradford, Pa., announces a newcomer to its regular line of repair devices—Style 77A Band Clamp, for quick repair of small



pin holes, leaks, and splits in straight runs of pipe.

This new clamp is claimed to be one of the most useful and handy items now available for such repair work. Simple in construction, easy and fast to apply, it prevents further damage and loss of line contents where small defects in the line occur. It is made up of a heavy, one-piece steel band of circular, split construction, with a riveted bolt lug at each end. A trackhead bolt pulls the ends securely. To install, the clamp is sprung apart until it can be slipped around the pipe and over the gasket or packing; then it is bolted up to make a firm, leakproof repair. A special cone gasket (furnished when specified) has two molded rubber tabs which aid in positioning the gasket over the pin hole or leak.

An unusual range of sizes is offered. This includes all standard pipe sizes from 1-in. i.d. to 26-in. o.d. Also cast-iron pipe and special sizes. Band widths of 2-in., 3-in., 4-in., and 6-in. may be had. Band thicknesses are ¼-in., 3/32-in., and ⅛-in.

P&H Designs New Welder Trailer to Save Rubber

Harnischfeger Corp., Milwaukee, Wis., has announced the immediate substitution of an all-steel wheel portable mounting on its P&H gas engine-driven welders for the rubber-tired trailer. The new trailer is of the two-wheel type, equipped with an axle and heavy-duty springs, and suitable for field work and highway towing. The wheels have a 24-in. diameter and 4-in. rim face, and are designed to permit quick changeover to a pressed-steel wheel with pneumatic tire when available later. The towing bar and trailer rest have not been changed. To compensate for the harder riding of steel-rimmed wheels, the new unit is built for heavy duty in every way, with a nine-leaf spring as well as extra-heavy axle.

The new steel-wheel carriage is now being put on all portable gas-engine welder shipments. This includes all Army, Navy, and lend-lease orders, unless specifically stipulated that rubber tires are essential. The welding range of P&H gas engine-driven models is from 15 to 370 amp.

Explosionproof Timers

To meet the many present-day demands for explosionproof timers suitable for operations in atmospheres containing gasoline, naphtha, petroleum, benzol, acetone, lacquer solvent, natural gas, etc., R. W. Cramer Co., Inc., Centerbrook, Conn., has just placed on the market a line of timers to meet such specifications.

CLASSIFIED ADVERTISING

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Form "Evidence of Conception" with instructions for use and "Schedule of Government and Attorney's Fees—FREE.

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Patent Law Offices
418 Bowen Bldg., Washington, D. C.

Leases and Drilling Blocks

LEASES—East Texas, La., South Ark. 20 acres up, dollar acre up.—Owners—Address Attorney, Box 1122, Little Rock, Ark.

LEASES ROYALTIES

PRODUCING OR NONPRODUCING

Texas, New Mexico, Oklahoma, Louisiana and Illinois

20 Years' Experience

Inquiries Invited

B. D. BUCKLEY

Paul Brown Bldg., St. Louis, Mo.

U. S. OIL rights can be filed for lease developing area. Want several join filing block. Small expense. Box B-187, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE: Oil and Gas leases on proven structures, drilling propositions, small production and fluorspar deposits. Reports furnished. W. P. Harley, Bowling Green, Ky.

OIL LEASES for sale in Dakota pool. Major companies now drilling. Prices and information. Write J. A. Charles, 232 E. 14th, Tulsa, Okla.

I OWN 17,240 acres of land at Guin, Ala. I would like to give an oil, gas and mineral lease to some one financially able to pay the rental on same. If I could get a good oil lease I would hold the land for the purpose of growing timber. H. H. Maschmeyer, 74 St. Francis St., Mobile, Ala.

OPERATORS: 4000 acres R. M. area Dome, fully geologized, want drilled, will farm with bottom hole money. Box B-186, The Oil and Gas Journal, Tulsa, Okla.

WANTED: Competent individual or Company to drill test well on a leased tract of 12,000 acres, located in Saline Co., Southeastern Nebraska. Said tract borders the Nemaha Ridge on the West, and in the Salina series. Will give acreage for completed well. Lease form Producers 88, rental free. Kable & Wagner, P. O. Box 114, Friend, Nebr.

INVESTORS investigate leases $2 acre and Royalty ahead of Drill. New strikes. Large Profits. E. M. Adams, Marshall, Tex.

PARTNER Wanted in 52190 acre solid block wildcat lease for development. Box B-182, The Oil and Gas Journal, Tulsa, Okla.

CHEAP CRANE COUNTY Sec. 18, B28, under Magnolia-Stanolind leases. Jefferson G. Smith, 215 Littlefield Bldg., Austin, Tex.

FOR SALE: Gas properties, average annual gross revenue, past three years, approximately $10,000.00. For particulars address P. O. Box 388, Mannington, W. Va.

Ranches and Farm Lands

A GILT-EDGE VALUE in ranch, 2160 acres priced, $22.50 per acre, well improved, will carry 800 head of cattle and supply all necessary feed; ideal for hog raising; 1100 acres of blue stem, Lespedeza and Bermuda pasture second bottom; 400 acres first bottom in cultivation, part in alfalfa and corn; 700 acres in timber pasture; 30 acres of grafted paper shell pecan grove; 2 modern residences, barns, stock and tool shed; fenced and cross fenced; abundance of water; one hour's drive from Tulsa; may also be purchased with stock and equipment. Blair Realty Co., Tulsa, Okla.

Financing

CAPITAL SEEKERS — Interested in raising $25,000 or more for a legitimate project should communicate with AMSTER LEONARD, Fox Theater Bldg., Detroit, Mich.

OUT OF 5000 American financial houses only 223 bought small issues last few years. The 223 names $4.00. JOHN F. MORRIS, Box 5411, Philadelphia.

Legal Blanks

BURKHART'S legal blanks and general forms serving Mid-Cont. oil field since 1908—Okla. Kans. N. Mex. Tex. Ala. Ark. Fla. Ga. Ill. Ind. Ky. La. Mich. Miss. Mo. Neb. N. Dak. Tenn. Wyo. Free catalog samples on request. Burkhart Ptg. & Sta. Co., 115 S. Cinn., Tulsa, Oklahoma.

Incorporation

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

Help Wanted

CHEMIST or Chemical Engineer: B.S. or M.S. Degree; previous petroleum refining or laboratory experience preferred. Reply must list personal and other pertinent data including starting salary. Box B-183, The Oil and Gas Journal, Tulsa, Okla.

MECHANICAL ENGINEER

Established midwestern pump manufacturer, doing high priority work, desires pump designer, experienced in centrifugal and reciprocating equipment for refinery service. Those who have had marine experience in addition preferred. This position will be permanent and will lead to position of chief engineer. Please reply giving all personal details as well as professional qualifications. All replies confidential. Box B-200, The Oil and Gas Journal, Tulsa, Okla.

WANTED

SUPERINTENDENT OF SERVICE by Chemical Company employing about 600 men. Location Gulf Coast. Must have knowledge and preferably experience in SAFETY ENGINEERING AND FIRE PREVENTION as applied to chemical plant and PERSONNEL AND EMPLOYMENT. Reply giving education, experience, references and salary expected in first letter. Box B-201, The Oil and Gas Journal, Tulsa, Okla.

MECHANICAL construction superintendent process control; Midwestern Refinneering firm has opening in Middle West for mechanical engineer who has had broad field experience in intricate refinery piping. Give full details regarding experience, salary, technical training, etc., in first letter. Applicants must be United States Citizens. Box B-203, The Oil and Gas Journal, Tulsa, Okla.

ENGINEERS WANTED

Petroleum or Chemical Engineers for refinery process control; Midwestern Refinery; University Engineering School graduate with basic knowledge of fluid flow and heat transfer; advancement opportunity; in reply state present employment, past experience, education, marital status, minimum salary expected, and recent photograph. Box B-204, The Oil and Gas Journal, Tulsa, Okla.

Situations Wanted

POSITION WANTED: Man with years of training in both accounting and production open for position to supervise both of these departments. Excellent references. Box B-190, The Oil and Gas Journal, Tulsa, Okla.

WANTED—Position with permanent location, as Geologist—Seismologist. B. S. and grad. work in geology, 8 years' exp. in geology and seismology. Age 33, Class 3-A, now employed. Will furnish detail information upon request. Inquire Box B-194, The Oil and Gas Journal, Tulsa, Okla.

Royalties

ANDREW J. BARRETT
The Philtower
Tulsa, Oklahoma.

WE BUY & SELL all types of Oil and Gas Royalties. Sales restricted to registered dealers only. Grimes Royalty Co., National Mutual Bldg., Tulsa, Okla.

FOR SALE—Landowner's Royalty under 160 acres leased to Humble Oil & Ref. Co. in Lea County, N. M., 27 pools in the county. Will sell in small interests. HARRY S. WRIGHT, FARMINGTON, NEW MEXICO.

FOR SALE: 25 acres good Oklahoma Royalty, excellent possibilities, leased to major company. Box 618, Great Bend, Kansas.

Oil Industry Printing

OIL FIELD LEGAL BLANKS

Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press. 215 East Third St., Tulsa, Okla.

Equipment Wanted

PRIVATE CAR OWNERS:

What will your older ones earn, net, while the War lasts?

What after the War?

What will they be worth then—only Scrap price?

Consider, then, their abnormal worth today?

You may realize TODAY—

Mileage returns of next several years! Present book carriage! Appreciable profit *additionally*!

Ordinarily, anyone of these three features is considered satisfactory realization!

You would, also, amortize NOW Replacement later with new and modern cars from the avoidance and saving of present excessive maintenance costs, the profit and accumulated interim interest, etc., etc.!

Obtain our quotation without obligation.

IRON & STEEL PRODUCTS, Inc.
37 years' experience
13412 S. Brainard Ave., Chicago, Ill.
***"ANYTHING* containing IRON or STEEL"**

WANTED—BULK PETROLEUM STORAGE, 10,000 BBLS. TANKS OR LARGER. Box B-120, The Oil and Gas Journal, Tulsa, Oklahoma.

Equipment Wanted

WANTED
Large Steel Storage Tanks and Structural Steel Buildings.
GREENSPON'S
National Stock Yards
(St. Clair County), Ill.

OPERATOR wishes to purchase for cash 3 or 4 used Cummins Diesel L1-800 Drilling Engines with chain transmission, slush pump and hoisting equipment of size of Wilson Giant or Titan drawworks. Please communicate all particular including prices to P.O. Box 5051, Metropolitan Station, Los Angeles, Calif.

WANTED

2—35,000-55,000 bbl. storage tanks.
2—1300' air compressors.
20—25 ton locomotive cranes.
R. C. STANHOPE, INC.
60 E. 42nd St., New York, N. Y.

WANTED: A rotary clay burner approximately 3' diameter x 30' long. Also one high pressure tower approximately 7' diameter x 15' long with minimum shell ¾" thick and ½" thick heads. Box B-202, The Oil and Gas Journal, Tulsa, Okla.

For Sale—Equipment

FOR SALE at Wewoka: 1-10 ton Athey Trusswheel wagon, Model 843, Serial J616. $150. Patridge, Cities Service Oil Co., Bartlesville, Okla.

50,000 FT. 2" Line Pipe, Screw & P. E. Also 3", 4", 6", 8" and other sizes. Large stock of fittings, valves & other material. GILBERT PIPE & SUPPLY, Electra, Tex.

FOR SALE—One 96 foot rotary drilling derrick now standing near Seminole, Oklahoma. Good condition, price $600.00. Inquire Eason Oil Co., Enid, Okla.

FOR SALE: 7¼ x 14 Oil Well Power Slush Pump, Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE: At Oklahoma City six #1 Smith 4' 6" x 16' Standard Oil and Gas Separators. Patridge, Cities Service Oil Co., Bartlesville, Oklahoma.

FOR SALE

35 H.P. Superior Gas Engine and 16 foot Band Wheel Power. Condition A-1. The Geo. McGinley Supply Co., Bowling Green, Kentucky.

FOR SALE 38 x 7, 40 x 8, and 10.50 x 24 used tires and tubes. Patridge, Cities Service Oil Co., Bartlesville, Okla.

FOR SALE: Star Mfg. Company, portable cooling tower, telescoping type, 7' wide, 13' long, 8' high. All steel. Melton Machinery & Supply Co., Seminole, Okla.

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St., Cincinnati, Ohio.

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REFINERY EQUIPMENT

One—40' x 40' long 4" thick, A. O. Smith Corporation Reaction chamber, hammer forged, excellent condition.
Two—6'-6" diameter x 37'-6" long x ¾" shell thickness x ⅞" head fractionating columns, complete with nine cast iron bubble decks each. Can furnish detailed drawings for refabrication of these two fractionating columns into one column size 6'-6" x 65', comprising 18 bubble decks and 8 side-to-side trays.
One—2,300 gallon per minute Braun Redwood cooling tower.
One—5' diameter x ⅜" shell thickness x 74' long crude fractionator complete with 18 bubble decks.

ARROW PETROLEUM CO.
7419 Franklin St., Forest Park, Ill.

FOR SALE: 2—100 ton Stillman Watson Hydraulic Jacks. 1—12" lift—540 lbs. weight; 1—18" lift 575 lbs. weight. Price $300 cash, in good condition. W. E. Hamman, Box 97, Wirt, Okla

FOR SALE: 27½" Ideal Rotary Table, 5 sheave 200 ton Crown Block, 4 sheave 72" traveling block, 8" Ideal enclosed rotary hook. Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE: Four 125-HP, 250# working pressure boilers, Oilfield type; also one 7' R. B. Union Tool unitized draw works, good condition, almost same as new. Inquire. T. T. Eason & Company, Enid, Okla.

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To Improve Our Service

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Fully reconditioned refinery equipment of all kinds—pressure vessels, pumps, bubble towers, tanks, valves and fittings, heat exchangers, compressors. No priorities required. Send us your inquiries.

SONKEN-GALAMBA SUPPLY COMPANY

BRANCH OFFICE
W. C. Berry or H. J. Galamba
Riverside at Second, Kansas City, Kansas

MAIN OFFICE
Robert W. Duden
Twenty-First at Union, Tulsa, Oklahoma

ALL OR ANY PART—COMPLETE 2000 BARREL REFINERY

2000 bbl. Pipe Still, 2½" ID x 2 15/16" OD x 20' Tubes Alloy Headers — 8 Heat Exchangers, 255 sq. ft. ea. All New Tubes — Complete Copper Sweetening Unit — New Carload Ethyl Plant — 47 Storage Tanks from 500 to 15000 bbl. cap. — 30 Pumps All Types — Valves — Fittings — Pipe

THE PLAINS OIL & REFINING CORPORATION
GREAT BEND, KANSAS

FOR SALE — 24,000' of ⅝" and 3000' of ¾" Pump Rods. One 87' MIW 157,000 lb. Derrick. One TC20B Oil Well Pump Unit, and misc. pumping equipment. All in first class condition. Dirks Brothers, Tuleta, Bee County, Texas.

FOR SALE: Oil Hill, Kansas 3 Sullivan Improved N Hydraulics only $100.00 ea. 6—3" x 4" GD chain driven power pumps. $50.00 ea. 4—2" Viking Pumps $10.00 ea 1—CN Sullivan Drill, $250.00. 1—Sullivan 20 drill only $250.00. 5—GD Power Pumps robbed, $50.00 ea. Patridge, Cities Service Oil Co., Bartlesville, Okla.

FOR SALE: 12 K.W. Portable Light Plant Powered by 35 H.P. International Engine. Melton Supply Co., Seminole, Okla.

ABSORBERS
2—72" x 30, 15 tray, 75# W.P.
1—72" x 30, 15 tray, 50# W.P.
All Southwestern Engineering Co. Make.
W. S. SMITH, 523 Thompson Bldg.
Tulsa, Okla. Phone 2-5473

7' x 30' STEEL RIVETED Horizontal Storage Tanks. Also towers, vessels, etc. GILBERT PIPE & SUPPLY, Electra, Tex.

FOR SALE: One No. 0 Star Water Well Drilling Machine, and 10,000 feet of 2" second-hand tubing. A. B. Ayres, New Castle, Indiana.

40,000 Feet 1-inch used galvanized pipe, reconditioned. Price 8c per foot f.o.b. Shreveport, La. American Pipe & Supply Co., 2335 Texas Ave., Shreveport, La.

FOR SALE: 1 Askenia Type Magnetometer #7970, $750.00. Cities Service Oil Co., Bartlesville, Okla.—H. D. Patridge.

FOR SALE: Two 200 H.P. Electric Motors complete with grids and controls. Melton Machinery & Supply Co., Seminole, Okla.

FOR SALE
COMPRESSORS
Complete Repressuring or Air Lift Plant for Immediate Delivery.
2—13 & 5½ x 12 Ingersoll-Rand XOB compressors 400# pressure V-belt driven by 120 H.P. Chicago Pneumatic 3-cylinder vertical gas engines.
2—12 & 7 x 10 Chicago Pneumatic 400# pressure vertical compressors direct connected to 120 H.P. 3-cylinder Chicago Pneumatic vertical gas engines complete.
Used very little — excellent condition. Located on original foundation in Louisiana.
EARL E. KNOX COMPANY
Erie, Penna.

FOR SALE: 14" Groove V Belt Pulley.
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Wichita Falls, Texas.

FOR SALE: 7¼ x 18 O. W. S. Mud hog slush pump, with 16 groove sheave, new liners and valves. Good condition. Located at Longview, Texas. Superior Oil Corp., Tulsa, Okla.

FOR SALE
OIL STORAGE TANKS
IN GOOD CONDITION
2—80,000 Bbl.
1—35,000 Bbl.
1—4,400 Bbl.
2—2,500 Bbl.
1—3,000 Bbl.
1— 600 Bbl.
Address Your Inquiries to
Dulien Steel Prod., Inc.
2280 Woolworth Bldg.
NEW YORK CITY, N. Y.
TELE. CORT. 7-4676

FOR SALE: 6 x 16 Wilson-Snyder Power Slush Pump. Melton Supply Co., Seminole, Okla.

FOR SALE: Wilson-Mogul Drawworks with water cooled brakes and 100 H.P. International Motor. Melton Supply Co., Seminole, Okla.

FOR SALE: Complete drilling outfit, #3 National Machine with engine, winch truck and four wheel trailer, water tanks, drilling lines, tools 18" to 6", 3,000' 7" casing all in excellent condition. Address inquiries to Box B-185, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE
55000 bbl. Steel Tank
5000 bbl. Steel Tank
Tidewater Equipment & Mac'y. Corp.
305 Madison Ave., New York, N. Y.

FOR SALE: A complete Rotary Drilling Rig Cardwell, R. L. Drawworks—7¼ x 12 Gardner-Denver Pump. Equipment in excellent shape and now operating in Illinois. Write Box B-181, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE
3—125 HP 350 WP Acme Boilers
3—125 HP 325 WP Broderick Boilers
2—125 HP 250 WP Donovan Boilers
10,000 Ft. 4" API Full Hole Drill Pipe
4,600 Ft. 4" Acme Full Hole Drill Pipe.
Major Tool & Supply Co., Okla. City, Okla.

DIESEL—GAS—ENGINES
Large selection — All sizes and types. Generator units, marine engines, gasoline engines, auxiliaries—boilers, steam engines, and turbo-generator sets.
Complete information on request.
A. G. SCHOONMAKER COMPANY
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ROTARY PUMPS
One Viking ET-4 rebuilt direct connected to 2¾ to 1 gear reducer. 150-200 gpm. 100 pounds.

One 4" Worthington high pressure type GR. 120 to 200 gpm. 300 pounds maximum pressure.

New pump performance guaranteed.
CORKEN PUMP & MACHINERY CO.
206 East Grand Oklahoma City

FOR SALE: F. O. B. Oklahoma Shipping point, 35,000 feet 6⅝" O. D. plain end, double length line pipe.
CENTRAL SUPPLY CO.
109 No. Elgin Phone 3-7552 Tulsa, Okla.

3" x 4" F&M Power Pump in excellent condition. Also Centrifugal & Steam Pumps. Gilbert Pipe & Supply, Electra, Tex.

3—150-HP 150# Working Pressure horizontal Return Tubular Boilers with breeching, in good condition; also unusually good stock of three, four and six inch valves and fittings for refinery and pipe line service. Call or write Eason Oil Co., Enid, Okla.

FOR SALE — OIL STORAGE TANKS
6—31,000 bbl. with breather roofs.
3—31,000 bbl. without roofs.
In first class condition — ready for immediate delivery.
1—Parkersburg SC-11 Pumping Unit, Stroke 5' to 11'.
JOS. GREENSPON'S SON PIPE CORP.
National Stock Yards (St. Clair County), Illinois.

FOR SALE: 1—100 HP Fairbanks-Morse Diesel Drilling Engine in good condition. Box B-192, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE near Andrews, Texas: 10,000 bbl. bolted steel tank. J. W. Tripplehorn, Fort Worth, Texas.

FOR SALE: One complete Thrift Hydraulic Pipe Pulling Outfit. Cheap. F. O. Wilkins, 201 Commerce Building, Mt. Pleasant, Michigan.

FOR SALE: 2 Heinie water tube boilers in first class condition, complete with all connections, 30-ft. steel breeching and 80-ft. riveted stack. East Texas Pipe & S. Co., Kilgore, Texas.

20" x 12" ING. Rand Vacuum Pump. Also Compressors, Gas Engines, Bessemer parts. Gilbert Pipe & Supply, Electra, Tex.

WE HAVE in stock for immediate shipment:
15 HP., Fairbanks-Morse Oil Engine.
25 HP., Tips Oil Engines.
40 HP., Tips Convertible Engines
40 HP., Tips Gas Engines
50 HP., Tips, 2 cyl., Oil Engine.
120 HP., Tips, 3 cyl., Oil Engine.
TIPS ENGINE WORKS
Austin, Texas.

LINE PUMPS
Two—2½" 4 stage Byron Jackson multiplex with 150 h.p. motors and controls.
CORKEN PUMP & MACHINERY CO.
206 East Grand Oklahoma City

FOR SALE: 2—75 H.P. Fairbanks-Morse Type Y Oil Engines. Patridge, Cities Service Oil Co., Bartlesville, Okla.

COMPRESSOR CYLINDERS
2—18 x 20 Type S Clark
1—17 x 20 Type S Clark
1—16 x 20 V.H. Bessemer
1—15 x 20 V.H. Bessemer
1—7½ x 20 — 750# W.P. Bessemer
1—8½ x 20 Worthington
1—15 x 20 Worthington
3—16 x 20 Ingersoll-Rand
All above reconditioned and ready for work.
W. S. SMITH, 523 Thompson Bldg.
Tulsa, Okla. Phone 2-5473

FOR SALE

We offer 523, 55-ton all-steel, self-clearing DOUBLE HOPPER CARS consisting of:

160 USRA construction; built 1921-1922; with A-B brakes; 1880 cubical feet capacity.

363 built 1910-1915; with KD-1012 brakes, 1683 feet capacity.

ALL HAVE FULL "U" CAST STEEL TRUCK FRAMES.

Purchaser must buy all.

PRICE: $1700.00 each f.o.t. Pennsylvania

TERMS: Cash with purchase.

DELIVERY CAN COMMENCE IMMEDIATELY AND BE COMPLETED IN ABOUT 60 DAYS—AND VERY POSSIBLY SOONER.

Some $30,000 to $40,000 NEW REPAIR MATERIALS also available which you may wish to have inspected at the same time.

TIME and EXPEDITION ESSENTIAL and DESIRABLE.

Yours for Victory,

IRON & STEEL PRODUCTS, Inc.
37 years' experience
13412 S. Brainard Ave., Chicago, Illinois
"ANYTHING containing IRON or STEEL"

Steel VALVES!

Cast and Forged
Also
Cast Iron Valves
Standard and High Pressure
Every Type Used in an Oil Refinery
All Expertly Reconditioned and GUARANTEED to Perform Like New.

No Delays

Immediate Delivery
YOU SAVE 25%
Over Cost of New Valves

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1446 Guinotte . . . Kansas City, Mo.

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CALENDAR

August

WESTERN PETROLEUM REFINERS ASSOCIATION, technical meeting, North Louisiana group, Shreveport, La., August 14.

September

NATIONAL PETROLEUM ASSOCIATION, annual meeting, Hotel Traymore, Atlantic City, N. J., September 16-18.

October

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, regional meeting, St. Louis, Mo., October 2.

NATIONAL SAFETY CONGRESS and EXPOSITION, Stevens Hotel, Chicago, October 5-9.

TEXAS MID-CONTINENT OIL AND GAS ASSOCIATION, twenty-third annual meeting, Dallas, Tex., October 8-10.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, fall meeting, Rochester, N. Y., October 12-14.

INDIANA INDEPENDENT PETROLEUM ASSOCIATION, fall meeting, Hotel Severin, Indianapolis, Ind., October 14-15.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, Hotel Ambassador, Los Angeles, Calif., October 14-16.

NATIONAL STRIPPER WELL ASSOCIATION, annual meeting, Wichita, Kans., October 19.

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA, thirteenth annual convention, Wichita, Kans., October 19-21.

SOCIETY OF AUTOMOTIVE ENGINEERS, Midwest Fuels and Lubricants regional meeting, Tulsa, October 22-23.

NATIONAL LUBRICATING GREASE INSTITUTE, tenth annual meeting, New Orleans, La., October 25-29.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, Austin, Tex., October 29-31.

November

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, Los Angeles, Calif., November 5-6.

CALIFORNIA NATURAL GASOLINE ASSOCIATION, Los Angeles, Calif., November 6.

AMERICAN PETROLEUM INSTITUTE, twenty third annual meeting, Stevens Hotel, Chicago, Ill., November 9-13.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS. thirty-fifth annual meeting, Netherlands Plaza Hotel, Cincinnati, Ohio, November 16-18.

AMERICAN CHEMICAL SOCIETY, national chemical exposition and national industrial chemical conference, Stevens Hotel, Chicago, Ill., November 17-21.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, annual meeting, New York, November 30-December 4.

December

PETROLEUM ACCOUNTANTS SOCIETY OF OKLAHOMA, Hotel Mayo, Tulsa, December 17.

1943

February

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, New York, February 15-18, 1943.